

CHAPTER 4

Nonexperimental Research Methods

CHAPTER OUTLINE

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APA Learning Goals Linkage

ARE YOU EQUIPPED?

How do you pick what restaurants to eat at when you are traveling? Many people we know visit a website called Yelp (www.yelp.com). At this website, people can literally rate restaurants by providing a review with comments and the website will also filter restaurants by features such as distance from your location, price, and neighborhood, to name a few. You can read the reviews and use the filters to select a restaurant to visit, especially when you are in an unfamiliar city and want to reduce the risk of picking a bad place.

The use of this website (and others which are similar) brings up an interesting question. Specifically, is the price point of an establishment related to customer satisfaction? In other words, does what you pay for a meal impact your satisfaction with the restaurant? How could we answer this question? Take a minute and think about how you could gather information to address this question. What would you do?

There are numerous ways to gather information to find out if price of a restaurant is related to customer satisfaction with the meal. The fact that there is more than one way to gather information



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on this topic illustrates that social scientists have a plethora of research methods at their disposal. In this chapter, we are going to focus on nonexperimental research methods. We could use nonexperimental research methods to examine the relationship between price and customer satisfaction in several ways. First, we could use the existing records provided by the websites mentioned above. This would allow us to see if the two variables were related to one another. Using existing records such as those from yelp.com is known as archival research. Another way to see if the two variables were related to one another would be to ask customers. You could have customers complete a questionnaire asking about their opinions as they left different restaurants. This is known as survey research. Archival and survey research are just two examples of nonexperimental research which seeks to examine relationships among variables. We will talk in more detail about these methods and others throughout the chapter. Before we begin, you might want to know that research has been conducted on this topic and a relationship does exist between price and customer satisfaction. For example, Ye, Li, Wang, and Law (2014) found price was related to customer satisfaction when examining reviews of hotels through online reviews.

As you go through this chapter, we also want you to keep in mind how the material relates to the American Psychological Association goals for psychology majors. Specifically, this chapter will address the following goals:

- **Goal 2. Scientific Inquiry and Critical Thinking**
You will demonstrate scientific reasoning and problem solving, including effective research methods.
- **Goal 3. Ethical and Social Responsibility in a Diverse World**
You will apply ethical standards to evaluate psychological science and practice and you will develop ethically and socially responsible behaviors for professional and personal settings in a landscape that involves increasing diversity.
- **Goal 4. Communication**
You will demonstrate competence in writing and in oral and interpersonal communication skills.

Qualitative: Research methodologies where researchers seek subjectivity through in-depth collection of information and emerging hypotheses.

Quantitative: Research methodologies that seek objectivity through testable hypotheses and carefully designed studies.

DIFFERENTIATING AMONG METHODS

Psychology is the scientific study of thoughts and behaviors. Therefore, psychologists, and social scientists in general, use a variety of research methods to study what people think and do. There are two main ways to differentiate among types of research. First, you can describe a research method as being either qualitative or quantitative. **Qualitative** research is inductive by nature. Researchers using this methodology seek subjectivity through in-depth collection of information and emerging hypotheses. Researchers gather the data and draw conclusions on the basis of their observations. On the other hand, **quantitative** research is deductive by nature. Researchers using this methodology seek objectivity through testable hypotheses and carefully designed studies. Researchers gather data that can be reported in numbers and statistics. Conclusions are drawn from statistics and

generalized to populations of interest. It is interesting that most researchers are trained in either the qualitative or the quantitative approach. Very few researchers routinely use both approaches. However, the two approaches need not be viewed in opposition, as both can shed light on understanding variables of interest. Another way to differentiate among types of research is by describing if the research is experimental or nonexperimental. **Experimental research** involves the manipulation of a variable of interest and assignment of participants to treatment conditions. We will spend more time in later chapters talking about how to design and interpret experimental research. **Nonexperimental research** does not rely on manipulating variables. Rather, it makes observations about how variables are related to one another and describes the findings.

INTRODUCTION TO CORRELATIONAL METHODS

As mentioned above, nonexperimental research does not manipulate variables of interest. However, even without direct manipulation, you can still explore relationships between variables using **correlational research methods**. Correlational research methods are very important to the field. This methodology provides us with information on the initial link between variables of interest. Correlational research methods are also frequently reported in the media. We want to tell you about two correlational studies recently reported in the media examining issues related to weight and obesity. The first study was conducted by Kopycka-Kedzierawski, Auinger, Billings, and Weitzman (2008) at the Eastman Dental Center, which is part of the University of Rochester Medical Center. Kopycka-Kedzierawski et al. found that for children between the ages of 6 and 18 there was a relationship between weight and tooth decay. Surprisingly, as weight increased, the risk of tooth decay decreased. We will talk a little later on about why these results might have been obtained. For now, we want to focus your attention on how this study shows that two variables (i.e., weight and tooth decay) are related to one another. Our second news story reported that Gazdzinski, Kornak, Weiner, Meyerhoff, and Nat (2008) found that weight was related to biochemical deficiencies. Specifically as weight increased for individuals, researchers found lower-than-normal levels of markers for neuronal health and cell membrane synthesis. We will return to understanding these results in just a minute when we discuss the advantages and disadvantages of this method.

When you have a correlational research method, your results will tell you if the two variables are related. Variables can be either positively or negatively related. Do not be confused by the labels of positive correlation and negative correlation. This does not mean that positive correlations are good and negative correlations are bad. Rather, **positive correlations** have variables that vary in the same direction and **negative correlations** have variables that vary in opposite directions. To make this clear, we want to tell you about some examples of positive and negative correlations. We have also provided you with the figure below to visually represent each type of correlation. Two variables that are positively correlated are years of education and salary. This is a positive correlation because as scores on one variable increase so too do scores on the second variable. Similarly, as scores on one variable decrease so too do scores on the second variable. In this situation, the more number of years of

Experimental: A class of research methodologies that involve manipulation of a variable.

Nonexperimental: A class of research methodologies that involve the study of how variables are related.

Correlational Research Methods: Research methodologies that evaluate the relationship between variables.



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Positive Correlation: Two or more variables vary in the same direction.

Negative Correlation: Two or more variables vary in opposite directions.

education a person has, the higher the salary. Conversely, the fewer number of years of education a person has, the lower the salary. In both instances, the two variables either increased or decreased together, making this a positive correlation. Another example of a positive correlation is time spent studying for a test and performance on the test. In general, the more you study for a test, the higher your grade on the test, and the less you study for a test, the lower your grade on the test. Again, this is a positive correlation because both variables are increasing or decreasing together. Another example of a positive correlation is the amount of food consumed and weight. The more food that you consume, the higher your weight and the less food that you consume, the lower your weight.

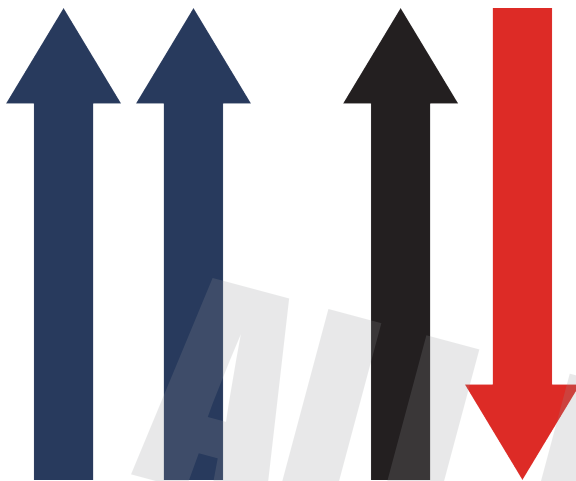


Fig 4.1 Arrows for Positive and Negative Correlation

With negative correlations, the two variables of interest are related to one another as well. However, as one variable increases, the other variable decreases, or as one variable decreases, the other variable increases. An example of a negative correlation is marital satisfaction and likelihood of divorce. As marital satisfaction increases, the likelihood of divorce decreases, and as marital satisfaction decreases, the likelihood of divorce increases. The two examples that we presented earlier from news reports were also examples of negative correlations. Remember that as weight of children increased, the risk for tooth decay decreased. The reverse can also be stated. As the risk of tooth decay increased, the weight of children decreased. Thus, these two variables were related to one another but in opposite directions. Similarly, in the second report, as weight of individuals increased, nor mal levels of brain functioning

decreased, or as normal functioning increased, weight of individuals decreased. We find it helpful to draw arrows for each of the variables that we are reading about. If the variable is increasing, we draw an up arrow. If the variable is decreasing, we draw a down arrow (Figure 4.1). We can then look at the arrows to see if they are both pointing in the same direction (positive correlation) or in different directions (negative correlation).

YOU TRY IT!

We want you to get some practice in determining if correlational results are positive or negative. Take a look at the findings below and state whether each of them is a positive or negative correlation.

RESEARCH FINDINGS:

1. As ice-cream sales increase, murder rates increase.
The following research findings are from a study published in JPI by Black, Lindberg, Garansi, and Sleigh (2013). The study examined the relationships between perceived sense of fairness as a child and adverse outcomes as an adult.
2. As the sense of unfairness in the childhood home increased, current emotional openness to others decreased.



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3. As sense of unfairness increased, individual's pessimistic views of the future increased.
4. As the sense of unfairness in the childhood home increased, individual's self-esteem decreased.

ANSWERS

1. It is hard to believe but this first example is a true one. Research on this topic has found that as ice-cream sales increase, rates of murder also increase. We will talk about what is going on in this situation in a minute. For right now, we want to draw your attention to the fact that this example is a positive correlation because as one variable goes up (ice-cream sales) so too does the second variable (murder rates). It would be visually represented as follows:
2. This is an example of a negative correlation because the two variables are pointing in opposite directions. As one variable increases (sense of unfairness), the other variable decreases (emotional openness to others). Again, you could draw arrows to help determine the type of correlation. For this, the arrows would be as follows:
3. This is also an example of a positive correlation because both variables (sense of unfairness and ratings of pessimistic view of the future) are increasing together. Also, note the reverse statement is true: as sense of unfairness decreases, pessimistic views of the future decrease.
4. Finally, there is a negative relationship between sense of unfairness in the childhood home and self-esteem. As one variable increases (sense of unfairness), the other variable decreases (self-esteem). This brings us to an interesting point to consider. Specifically, how do you interpret these correlational research findings? Should you hold your baby all the time so he or she does not cry? Not necessarily. We will discuss three questions for you to ask yourself when interpreting correlational research findings.



How did you do with these four examples? We should mention that sometimes the direction of a variable is not as clearly stated in the media or in a research article as we did in our examples. However, if you stop and think about the results, you will be able to determine if the scores are increasing or decreasing for the variable.

As with any research method, there are advantages and disadvantages to examining correlations between variables. One major advantage of correlational research is that it allows us to make predictions. For example, if we know marital satisfaction and likelihood of divorce are negatively correlated, it can help us in counseling couples who are experiencing low marital satisfaction. Many times, examining correlations between variables is a great starting point to researching a topic. Plus, it is a useful method when conducting a true experiment would not be ethical. This brings us to a limitation of the method, determining cause and effect. Using a previous example, should we stop buying ice-cream so that we can reduce the number of murders committed? This even sounds like a strange question to ask. When you have a correlation, you must think about the directionality of the correlation and ask yourself the following questions:

- Is X causing Y?
- Is Y causing X?
- Is there a third variable causing both X and Y to be related?

In the example of ice-cream sales and murder rates, you would ask yourself the following questions:

- Does eating ice-cream (X) cause you to commit murder (Y)?
- Does committing murder (Y) cause you to eat ice-cream (X)?
- Is there a third variable that is causing ice-cream sales (X) and murder rates (Y) to be related?

It really does not make sense that eating ice-cream would cause you to commit murder or that murdering people would cause you to eat ice-cream. However, it does make sense that a third variable (like heat) is related to both. Specifically, as it gets hotter, ice-cream sales increase. Also, as it gets hotter, murder rates increase. Therefore, in this example, it is likely that a third variable was influencing both variables. We cannot emphasize enough on how important it is to not infer cause and effect from correlational research. Remember that this method provides very useful information as to how variables are related, but other factors could be causing the finding.

SECTION SUMMARY

- Qualitative research methodologies seek subjectivity through in-depth collection of information and emerging hypotheses (pp. 60–61).
- Quantitative research methodologies seek objectivity through testable hypotheses and carefully designed studies (pp. 60–61).
- Experimental research is a class of research methodologies that involve direct manipulation of a variable (p. 61).
- Nonexperimental research is a class of research methodologies that do not rely on manipulating variables (p. 61).
- Correlational research methods evaluate the relationship between variables (pp. 61–64).
 - Positive correlations have variables that vary in the same direction. (pp. 61–63)
 - Negative correlations have variables that vary in opposite directions. (pp. 61–63)

NONEXPERIMENTAL METHODS

So far, we have provided you with introductory information that will be helpful as you learn about nonexperimental designs. In this chapter, we will discuss the following nonexperimental designs: ethnography, naturalistic observation, case studies, archival research, content analysis, and survey. It is important to note that all these nonexperimental designs can examine relationships among variables as mentioned previously under correlational methodologies. We will begin with **ethnography**. Typically, ethnographies are associated with the field of anthropology and are used to describe new cultures. The purpose of this method is to describe a culture in detail. In doing so, the researcher records and transcribes events that he or she witnesses and shares these findings with others. Many times, ethnographic questions concern the relationship between culture and behavior, and thus other social scientists are interested in the method. For example, Russell (2011) used ethnographic techniques to learn more about homeless women in Baltimore. One advantage of this methodology is that you can get “rich” or detailed information from an insider’s perspective. Disadvantages include the lack of a testable hypothesis, the inability to infer cause and effect, and little ability to generalize the results to other groups (to be discussed further in Chapter 5).

Naturalistic observation is where you observe people or animals in their natural settings. These observations can occur in the field (sometimes, called field studies) or in the laboratory (referred to as laboratory observations). Studying people in their natural setting means many things. One of the most famous naturalistic observations was conducted by Jane Goodall. In the summer of 1960, Goodall went to East Africa to live among the chimpanzee population. There were many aspects about chimpanzees that Goodall wanted to learn such as if chimps used tools. She believed the best way to understand the chimp behavior was to observe them in their natural environment. Goodall’s work has led to numerous publications on the life of chimps.

We want to follow up this classic example of naturalistic observation with more everyday examples to illustrate that natural settings are diverse and you are not required to travel to far-off destinations. First, Middlemist, Knowles, and Matter (1976) wanted to know how the presence of another man in the bathroom influenced men’s selection of a urinal and urinating behaviors. To do so, the researcher hung out in front of the bathroom mirror. The researcher gathered information on which urinals men used and their urinating behaviors (i.e., length of time to begin urinating and duration of urination). Results indicated that men prefer not to use a urinal next to another man.

Ethnography: Used to describe a culture in detail by recoding and transcribing events that are witnessed.

Naturalistic Observation: A research methodology where a researcher observes people or animals in their natural setting.



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In addition, the closer a man is to another man in terms of urinal distance, the longer it takes for them to begin urinating and the shorter the duration of urination. It would be interesting to see if gender differences occur in this behavior. Another example of a naturalistic observation comes from developmental psychologists who routinely use laboratory observations to study children. Important developmental information has been gained by bringing children into the lab and observing their interactions with their mom and dad. Examples include information on attachment style and stages of development such as object perma-

nence. Finally, we use naturalistic observations in the world of teaching. It is not uncommon for fellow professors to observe one another in the classroom. These observations are used early on in a faculty member's teaching career to provide them with constructive criticism and later on in a career to support decisions regarding promotion and tenure.

The three examples of naturalistic observation that we have shared with you are varied in topic and scope. However, there are some commonalities in these observations. To begin, the researcher had to decide on a topic of behavior to observe and whether his or her presence would be known or hidden to the participants. In Goodall's situation, it was almost unavoidable that the chimps were aware of her presence. Similarly, when a professor has their teaching observed by a colleague, the professor and the students in the class are aware of the observation. In fact, students will quickly recognize a new face in the crowd. However, it was possible for the researcher in the urinal research example to hide his true purpose and pretend to be using the restroom too. Developmental psychologists often hide their presence by videotaping children's interactions with parents and responses to new stimuli from another room. Another commonality in our examples was that the researcher engaged in a systematic observation of specified activities. Sometimes, a coding system is used to describe the observed behaviors and researchers must be trained prior to their observations. Finally, to carry out their observations, researchers will need equipment to note their observations and may use a video camera.

There are many advantages to this methodology. To begin, the behavior being observed is natural and spontaneous. For the most part, participants being observed in naturalistic observations are just doing what they normally do in life. This is an advantage over research procedures that require people to participate in a lab setting or participate in tasks that are unfamiliar to them. It would be very difficult to answer questions about male bathroom behavior in a more realistic way. However, this method also has several disadvantages that you must consider. One main disadvantage is how the observer changes people's behavior by his or her presence. For instance, we can talk about this limitation with the example of teaching observations. Every time a peer has observed our classes, the students act differently. They become shy and well behaved compared to a typical day. This could be due to the fact that the students are trying to behave and make us look good to the observer or we are acting differently and the students are picking up on our changed behavior. Either way, the observation itself changed the natural setting. If a researcher decided to avoid this disadvantage by hiding his or her presence, he or

she must consider the participant's right to privacy as well. Another disadvantage is that the researcher has to wait for events to occur. It might have taken a few hours before a man came to use the restroom; and Goodall waited months before seeing chimps use tools. Researchers also need to be careful not to introduce bias in their observations. For example, researchers might be looking for a particular behavior and report "seeing it" when others would not. A well-known example of this has occurred with observation research of chimps using sign language. Some researchers reported seeing animals use sign language, while other researchers reported the animals were not signing. Finally, cause and effect cannot be determined from naturalistic observations.

YOU TRY IT!

We have just covered information on naturalistic observations. If you wanted to examine how children play with one another and how frequently aggressive behaviors occurred, how could you use a naturalistic observation to investigate these topics? Discuss in your answer how you could conduct the study when your presence was known and unknown to the children.

ANSWER

You could investigate how children play with one another and their aggressive acts during play by going to a place where children naturally play together, like a playground. This could be at a community park or at a school. You could hide your presence if you are worried that children will play differently knowing you are watching. For example, you could watch children on a school playground from a classroom window or you could take your own child to the park and be just another parent. On the other hand, you might decide that children knowing you are around will not terribly influence their behavior so you could just sit and watch. In making your observations, you would probably have devised a coding system in advance. This way you would know what was considered violent behavior. If possible, another person could watch with you and make observations, allowing for you to compare observations.

The next nonexperimental research method that we want to discuss is a case study. A **case study** is an in-depth observation of an individual, animal, event, or treatment method. Typically, an intensive observation is done and detailed account is taken because the event is extremely rare and unusual. Case studies in the field are not just limited to Freud's psychiatric applications. There are other classic examples of case studies in the field. These include Phineas Gage and cases of feral children. Phineas Gage provided us with information on the link between personality and parts of the brain. Specifically, in 1848, an explosion sent a tamping iron through Gage's skull. Surprisingly, Gage survived the explosion but his behavior changed greatly due to the damage in the frontal lobes of his brain. Researchers have long been interested in providing a detailed account of what took place and how Gage's behavior changed as a result. Cases of feral children have provided the field with information on the importance of early exposure to language. For example, a child who is referred to as Genie was found around the age of 13. Until she was found, Genie had been kept in isolation and deprived of any exposure to language. This case study was an opportunity to see how language deprivation would influence

Case Study: A research methodology that is an in-depth observation of an individual, animal, event, or treatment method.

Genie's ability to later acquire a language. Genie was able to learn some level of English. However, her fluency was impaired and the actual level of her fluency is debated among experts (Curtiss, 1977).

When telling students about case studies, we always mention the two classics above. In addition to these, we have two more case studies that we heard about during our studies and have not forgotten. The first case study is from the area of human sexuality (Linnau & Mann, 2003). A male patient was admitted to the hospital for severe abdominal pain. When questioned, the patient admitted to swallowing Barbie doll heads (including hair) for sexual gratification. Researchers were interested in understanding how this provided the patient with sexual gratification and how such a behavior develops. A final case study is that of Clive Wearing. Clive Wearing was a brilliant musician. However, due to a case of viral encephalitis, Clive lost the ability to form new memories. This is known as anterograde amnesia. *The Mind*, a series by BBC, documents the events leading up to and after Clive's memory loss. Researchers are particularly interested in the parts of the brain damaged and the result on Clive's memories and behaviors.



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The major advantage to case studies is that we can study rare events that would be unethical to study otherwise. It would be extremely unethical to deprive a child of language, make people swallow objects, or damage parts of the brain to see how the event influenced an individual's behavior. Therefore, case studies provide us with unique opportunities to better understand situations that we could not study experimentally. Despite this advantage, there are limitations to this method. First, we do not always know the cause of the behavior. In trying to understand the male patient admitted to the hospital, researchers attempted to reconstruct events from his past to explain his current situation. Yet, this procedure introduces bias because the researchers are selecting what information from his past they think is important. There could be other variables that the patient and the researchers were unaware of that influenced him. Second, these unusual events might not influence everybody in the same manner. For example, Gage was extremely fortunate to have survived the explosion. Not all people would have survived. Furthermore, not all people would have experienced the same resulting behavior. Thus, when using case studies, it is important to keep in mind the limitations of the findings.

Archival Research: A non-experimental method where the researcher uses existing records and selects portions of the records to examine.

Archival research is a nonexperimental method where you use existing records and select portions of the records to examine. These existing records were collected by other people as a form of public records. Some examples include census information, marriage applications, police arrests, and reports prepared by your university. One of Jenn's first studies as an undergraduate student was an archival study. Jenn was examining sex and age differences in couples applying for marriage. To do so, she obtained the local newspaper's listing of couples applying for marriage licenses in Shelby County, Tennessee, for 1 month. This provided 783 couples. For each listing, the newspaper provided the name and age of the applicants with

the male's name listed first. Jenn found that in 63% of the couples the male was older than the female. She discussed these findings in relation to sociobiological theories (Bonds & Nicks, 1999). Jenn has continued to use archival studies in her career. For example, she has used existing records to (a) compare the number of women to men journal editors in psychology, (b) determine the level of engagement in the classroom of Native American students compared to other ethnic groups at an East Coast university, and (c) examine rates of graduation for honors students compared to nonhonors students. Within the field, archival research is used to investigate a variety of topics. For example, Granhag, Ask, Rebelius, Öhman, and Giolla (2013) used descriptions reported to the police by witnesses of a murder to look at accuracy of basic and detailed attributes of offenders and Brenner, et al. (2013) used an archival method to assess rates of brain injury for Veterans seeking psychological help.

YOU TRY IT!

Many universities have a research day at the end of the academic year. This is one day out of the year where students showcase to the university community the products of their scholarly endeavors. Typically, a program is provided for the event which lists the following information: student's name, student's major, title of work, and faculty advisor. The information in the program is collected by the program director. However, you could use the existing data in the program to conduct an archival study. How would you examine rates of student participation across majors using the program?

ANSWER

The program provides the readers with a record of the events that took place. By examining the program, you could compare the number of students across majors to examine rates of participation. You might find that 50% of the student presenters at the research day were from majors in the natural sciences, and fewer numbers were from the arts and humanities. This information could be helpful in numerous ways. First, the people who sponsor the research day might want to consider actively advertising the event to professors and students in the arts and humanities. Second, they may also need to reconsider how work is displayed so that artists can display physical pieces of work and theater/music majors can perform their work.

There are many positive points to using an archival method. For example, you do not have to spend time collecting data yourself. In addition, you might find that more information on the topic was gathered for public records than you would have gathered on your own. Jenn found this to be the case with her archival study on Native Americans at an East Coast university. She used existing records collected by the university and was able to examine variables that she had not originally considered because the information was available. On the other hand, sometimes the records that you need have not been collected or are incomplete. Another disadvantage is that you cannot infer cause and effect. For example, you could not claim that a student's major causes him or her to be more involved with the research day. It could be additional factors (as mentioned above) leading to varying rates of participation across majors.

Content Analysis:

A research methodology where a researcher counts the number of times a particular piece of content occurs.

Survey Research:

A research methodology where one designs a questionnaire to obtain information regarding behaviors, attitudes, or opinions.

Before we move onto survey research, we want to briefly discuss content analysis. **Content analysis** is very similar to archival research in that you are examining existing documents. In this research method, you basically count the number of times a particular content of interest occurs. This is a common method used to examine media. For example, researchers will count the number of characters of different racial, gender, or ethnic groups on television. Researchers using content analysis need to utilize similar definitions of content to obtain the same results. We will talk about this issue of similar definitions in Chapter 7. Typically, content analysis is conducted before an experiment in media research. Here is an example. First, researchers might use a content analysis to examine the frequency of racist portrayals of a minority group in the media. If such portrayals of the minority group do exist, researchers could then conduct an experiment to see if these racist portrayals influenced viewers' attitudes and behaviors toward that minority group. Recently, Burgess, Dill, Stermer, Burgess, and Brown (2011) conducted a content analysis of video game magazines and results indicated that minority women were rarely depicted and minority men were more likely to be depicted as athletes or aggressive.

The last type of nonexperimental research that we will cover in this chapter is survey research. **Survey research** is where you design a questionnaire to obtain information regarding individuals' behaviors, attitudes, or opinions. This questionnaire can be administered in a variety of formats. Maybe the most common format is the written format. Questions are typed and can be administered to participants in person by having them answer on paper or computer, through a mailed survey, and even over the Internet. Another format of administering the questionnaire is via telephone. You

can ask people questions verbally in person, which is known as a face-to-face interview, or gather a small group of people together to discuss the questions, which is known as a focus group. Each of these formats has its own advantages and disadvantages. A lengthy discussion of each is out of the scope of this book. However, pros and cons regarding the use of surveys in general will be discussed later in the chapter.

In April 2008, the National Sleep Foundation (NSF) released findings from a survey they conducted. The NSF collected information regarding participants' behavior and sleep patterns. Among the results reported, 36% of respondents fell asleep while driving, 29% reported becoming very tired at work within the last month, and 20% reported having sex less often due to a lack of sleep. Survey research has also examined sleep patterns in children. Specifically, survey research found a link between sleep, television viewing, and weight in children. Taveras et al. (2008) found that children are more likely to be overweight by age three if (a) the child sleeps less than 12 hours per day and (b) the child watches television more than two hours a day. Survey research has even found sleep is related to where you live. Specifically, those individuals living in a disadvantaged neighborhood report lower ratings of sleep quality, which is also related to survey responses of mental and physical health (Hale et al., 2013). Thus, survey research provides us with a wealth of information in terms of what people are doing and thinking on a given topic.

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In order to obtain this information from participants, researchers must carefully construct surveys. Survey construction is a skill that takes practice to learn. For those thinking of graduate school, learning how to ask other people questions in a systematic manner will be an extremely valuable skill. Even if you are not planning on attending graduate school, we believe knowledge of survey construction to be of value to you. We have put together a few general suggestions on survey construction. Refer to Table 4.1 as we will talk you through these suggestions with an example.

The first step to survey construction is to determine what information you want to gather from participants. In other words, you want to think about the purpose of your survey. Although this may sound simple, it is an important step. It is easy to get carried away and ask too many questions, which may be off topic from your original purpose.

Table 4.1 Suggestions for survey construction.

Determine the purpose of questionnaire
Determine the type of questions
Ask about one issue per question
Make alternatives clear
Write questions in an unbiased manner
Avoid negative wording
Avoid leading questions
Most importantly, obey the law of parsimony

For our example, the purpose of the questionnaire will be to measure a faculty member's teaching ability.

In the second step, you will want to determine the type of question to ask. This includes deciding whether you will use open-ended questions or closed ended questions. **Open-ended questions** are written to elicit detailed and thoughtful answers from respondents. With open-ended questions, the respondents do not have a set way to answer. For example, you might want to ask students how prepared a faculty member was for class. You could ask, "How prepared was the faculty member for class?" and leave the response section open so students could write in an answer to the question. This would be an open-ended question. On the other hand, you could ask, "How prepared was the faculty member for class?" and have students select from a predetermined list of options (e.g., 1 = never prepared, 2 = somewhat prepared, 3 = always prepared). This would be a **closed ended question**. There are pros and cons to both types of questions. Open-ended questions allow you to gather responses that you might not have thought of, whereas closed ended responses limit you to only the responses provided by the researcher. However, closed ended responses are typically easier to score, whereas open-ended responses take time to quantify. Remember that not all of your questions have to be of the same type. It is possible to have a combination of both.

Open-Ended Questions:

Questions in which a response is elicited and there is not a predetermined list of responses.

Closed Ended Questions:

Questions in which the answers must be selected from a predetermined list of responses.

Third, be sure when you are asking questions that you only ask about one item or factor per question. For example, you would not want to ask about a faculty member's preparedness for class and promptness in returning assignments in the same question.

To what degree do you agree with this statement?

I find the professor to be prepared for class and prompt at returning graded work.

Not at all 1 2 3 4 5 6 7 Very Much

This is because the student may have different ratings of each. The student might want to rate the faculty member highly on preparedness and poorly on promptness. However, if both factors are asked about in one question, you will not be able to see the difference between the two factors in students' responses.

The fourth suggestion that we have for you when constructing a survey is to make the alternatives clear. Below is an example of a closed ended question with alternatives that are not clear.

How often did you seek help from the faculty member outside of class?
(Check only one alternative.)

- 1-2 times during the semester
- 2-3 times during the semester
- 3-4 times during the semester
- 4 or more times during the semester

The alternatives in this example are very ambiguous. If you had sought help from the faculty member three times during the semester, what option would you check? There are two options (i.e., 2-3 and 3-4) that include the number 3. It is much easier for a participant to answer questions when the alternatives are clearly presented and only one option is possible.

Number five on our list of suggestions is to write questions in an unbiased manner. For example, you would not want to refer to the faculty member as a "he" throughout the survey. This is because the faculty member could be a man or a woman. Sixth, it can also be helpful to avoid negative wording or wording that is complicated. Take a look at the example below.

The faculty member was not fair in his or her grading procedures.

Not at all true 1 2 3 4 5 6 7 Very True

To begin, the student completing the survey might not even notice that the word "not" is in the sentence. This could result in the faculty member receiving more negative evaluations on this item. You can help this situation by offsetting the word "not" (see below).

The faculty member was *not* fair in his or her grading procedures.

Not at all true 1 2 3 4 5 6 7 Very True

However, even with measures to draw students' attention to the negative word, some students still might find the question confusing. You do not want to give participants a headache trying to determine if higher scores on the scale are a good or a bad thing. Seventh, you should avoid the use of leading questions. If you want to ask students about how professional a faculty member was in class, it would be unwise to do so in the following manner:

Directions: Sometimes faculty members fail to act in a professional manner.

To what extent did the faculty member act in a professional member?

Not at all professional 1 2 3 4 5 6 7 Very professional

Beginning the directions by stating that sometimes faculty members will fail to act professionally will prime students to think about times in which this did occur. You want to be sure that you ask questions in such a way that participants are not primed or led to think of events in a certain way. The eighth, and the most important, step is to obey law of parsimony. In other words, you want to keep the survey as simple as possible to complete. When participants become confused or frustrated, they are more likely to give up or provide responses that are less accurate.

Before moving on to the last "You Try It!" section, we want to mention that survey research is not always nonexperimental in nature. Sometimes, surveys are used to gather data after participants have been exposed to the variable of interest, which the researcher manipulated. However, if no manipulation occurred prior to completing the survey, the survey would be nonexperimental in nature. Jenn et al. (2007) primed participants to recall either a positive or a negative portrayal of a homosexual person in the media. After being either positively primed or negatively primed, participants completed a survey on their attitudes toward gay men and lesbians. This is an example of how a survey can be used in an experimental research design.

YOU TRY IT!

We are going to tell you about a survey that a group of students working for Jenn constructed. Take a look at one question below from their survey. Which of the eight suggestions regarding survey construction did they fail to use?

Please indicate your current religion? (Check only one.)

- | | |
|-------------------------------------|---------------------------------------|
| <input type="checkbox"/> Catholic | <input type="checkbox"/> Baptist |
| <input type="checkbox"/> Lutheran | <input type="checkbox"/> Presbyterian |
| <input type="checkbox"/> Protestant | <input type="checkbox"/> Jewish |
| <input type="checkbox"/> Methodist | <input type="checkbox"/> Other |

ANSWER

Probably the biggest suggestion that this group of students failed to use was the fourth suggestion—make the alternatives clear. The alternatives listed are just not clear. For example, Lutheran, Methodist, Baptist, and Presbyterian are all examples of Protestant religions. This made looking at the data very confusing. We were unsure if those who checked Protestant were from a sect different from those listed or from one of the Protestant faiths listed. So it is always important to be sure that the alternatives are clear and that only one alternative is possible. As we mentioned, learning how to write questions is not a skill that comes easy to most people. It takes time and lots of practice. In Chapter 7, we will return to the issue of survey construction and wording questions to obtain specific types of data.

As with the other methods discussed in this chapter, there are advantages and disadvantages to using surveys. Surveys are convenient to use as they are easy to administer and you can obtain responses from numerous participants. Another big advantage is that you can gather information on a variety of issues and with regard to behaviors, attitudes, and opinions. However, surveys can be costly to administer. Copies need to be made and possibly an assistant hired to administer the survey. Depending on the format of the survey (such as with a telephone or a mail survey), there are typically a low number of participants who respond. Also, those participants who do respond could be different from those participants who do not respond. For all surveys, you must consider the fact that participants might lie or that the wording of the question could influence a participant's response. In face-to-face interviews, the characteristics of the researcher (e.g., ethnicity and sex) could influence how people respond to particular questions. Finally, participants may answer questions in such a way as to be viewed positively by the researchers. This is known as social desirability.

SECTION SUMMARY

- Ethnography is used to describe a culture in detail by recoding and transcribing events that are witnessed (p. 65).
- Naturalistic observation occurs when a researcher observes people or animals in their natural setting (p. 65).
- A case study is an in-depth observation of an individual, animal, event, or treatment method (p. 67).
- Archival research occurs when a researcher uses existing records and selects portions of the records to examine (p. 68).
- Content analysis is a research methodology similar to archival research. However, in a content analysis the researcher counts the number of times a particular piece of content occurs (p. 70).
- Survey research involves designing a questionnaire to obtain information regarding behaviors, attitudes, or opinions (pp. 70–74).

FACTORS TO CONSIDER WITH NONEXPERIMENTAL DESIGNS

We have discussed many types of nonexperimental research methods: ethnography, naturalistic observation, case studies, archival research, content analysis, and survey. For each method, we discussed the benefits and limitations. However, as a collective group, nonexperimental designs have a benefit of providing researchers with information that would many times be unethical or practically impossible to obtain otherwise. The primary limitation for these methods is the inability to determine cause and effect. Nevertheless, nonexperimental designs are extremely important to advancing the field.

CONVERGING RESEARCH METHODS

We have introduced and discussed nonexperimental designs thus far as an independent group in research methodologies. We have done this to highlight the uses and benefits of nonexperimental designs, as well as to separate nonexperimental designs from experimental designs. However, many researchers use both types of research methods when conducting a study. This is known as converging research methodologies. Converging research methodologies occur when a researcher uses more than one research methodology to study a single problem. By doing so, the researcher is able to use the strengths of one methodology to make up for the weaknesses of the other and vice versa.

For example, a researcher studying cheating has decided to use both a survey and an experimental methodology. Specifically, the researcher develops a survey to question participants on their history of cheating in the classroom. The researcher collects data on participants' self-reports of cheating behavior. After collecting data through the survey, the researcher develops an experiment in which the participants have the opportunity to earn money. However, unbeknownst to the participants, the only way they can earn the money is to cheat. The researcher then compares the participant's reported behaviors (through the survey) with their actual behaviors (through the experiment). Interestingly, this was an actual study conducted by Ong and Weiss (2000). By using both methodologies (experimental and nonexperimental), the researchers were better able to understand cheating while avoiding the disadvantages of both survey and experimental research.



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ARE YOU EQUIPPED NOW?

College campuses can be diverse in many ways. The U.S. News ranks the most racially diverse campuses in different regions of the country (i.e., North, South, Midwest, etc.) as well as the most economically diverse campuses in these same regions every year. The selected universities view their racial and economic diversity in a positive light, believing that it enriches the college experience. If a university wanted to investigate students' behaviors and opinions regarding how this diversity related to the overall college experience, how could a university do so using the nonexperimental research methods of case study, archival data, naturalistic observation, and survey?

ANSWER

Case Study

In order to conduct a case study, a university could select a student and follow that student during his or her college career. Throughout the study, the university could assess both the student's behaviors and his or her opinions in regard to the diversity on campus and the college experience. The key here is that the study is an in-depth investigation of a single individual.

Archival Data

Most universities have an Office of Institutional Research or Institutional Effectiveness, where large amounts of data are collected and housed. If a researcher wanted to conduct an archival study, this office would be a great place to start.

The researcher could examine data to answer this research question from several years back and begin to develop a clear picture on diversity as it relates to the college experience. Rather than collecting data, this researcher would only have to examine data that were already collected.

Naturalistic Observation

To conduct a naturalistic observation, researchers would want to observe students' behaviors in a diverse environment. Specifically, researchers could sit in a university cafeteria and systematically observe interactions that students have with other students of different racial and economic backgrounds. The researchers could assess who students eat with, how conversations occur, and how the similarities and differences impact students' behaviors.

Survey

The easiest way for a researcher to evaluate the impact of diversity on a student's college experience is to administer a survey. In particular, a researcher could develop a survey to assess students' behaviors and opinions on diversity. Then, the researcher could obtain a sample of students from the larger university population that is representative of the university as a whole (we will discuss sampling procedures in Chapter 8). Finally, the researcher would administer the survey to the students and collect data on the impact that diversity has on their college experience.

CHAPTER SUMMARY

- Research methodologies can be broken down into two types: qualitative and quantitative (pp. 60–61).
 - Qualitative research methodologies seek subjectivity through in-depth collection of information and emerging hypotheses (p. 60).
 - Quantitative research methodologies seek objectivity through testable hypotheses and carefully designed studies (p. 60).
- Often, researchers prefer to distinguish research as either nonexperimental or experimental research methods (pp. 60–61).
 - Experimental research is a class of research methodologies that involve direct manipulation of a variable (p. 61).
 - Nonexperimental research is a class of research methodologies that examine relationships among variables (p. 61).
- Correlational research establishes relationships between variables. Correlations can be either positive or negative (pp. 61–64).
 - Positive correlations have variables that vary in the same direction (pp. 61–63).
 - Negative correlations have variables that vary in opposite directions (pp. 61–63).
- There are six main types of nonexperimental research methods: ethnography, naturalistic observations, case study, archival research, and survey research (pp. 65–74).
 - Ethnography is used to describe a culture in detail by recoding and transcribing events that are witnessed (p. 65).
 - Naturalistic observation occurs when a researcher observes people or animals in their natural setting (p. 65).
 - A case study is an in-depth observation of an individual, animal, event, or treatment method (p. 67).
 - Archival research occurs when a researcher uses existing records and selects portions of the records to examine (p. 68).
 - A similar type of research methodology to archival research is a content analysis. However, in a content analysis the researcher counts the number of times a particular piece of content occurs (p. 70).
- Survey research involves designing a questionnaire to obtain information regarding behaviors, attitudes, or opinions (pp. 70–74).
- When conducting survey research, the construction of the questionnaire is vital to gathering data. To construct a strong questionnaire, there are eight steps you need to follow (p. 71):
 - Determine the purpose of questionnaire.
 - Determine the type of questions.
 - Ask about one issue per question.
 - Make alternatives clear.
 - Write questions in an unbiased manner.
 - Avoid negative wording.
 - Avoid leading questions.
 - Most importantly, obey law of parsimony.

APA LEARNING GOALS LINKAGE

- **Goal 2. Scientific Inquiry and Critical Thinking**

You will demonstrate scientific reasoning and problem solving, including effective research methods.

Sections Covered: Differentiating among Methods, Introduction to Correlational Methods, Nonexperimental Methods

Explanation of the Goal: Throughout this chapter, we have explored basic research methods in psychology such as the difference between qualitative and quantitative research designs. In addition, we have worked on distinguishing the nature of designs that permit causal inference from those that do not. The designs that do not permit causal inferences would include those that fall into the category of nonexperimental methods. Furthermore, we have described how various designs (i.e., correlational research, ethnography, naturalistic observations, survey, content analysis, and so on) address different types of questions and hypotheses, while also articulating the strengths and limitations for each of these methods.

Sections Covered: You Try It! in Introduction to Correlational Methods, Nonexperimental Methods, You Try It! in Surveys

Explanation of the Goal: In many places in this chapter, we have worked on critical thinking skills. In order to complete the “You Try It!” section on identifying positive and negative correlations, you had to make linkages between diverse observations such as increases in ice-cream sales and murder rates. In addition, you worked on developing sound arguments based on reasoning while solving the “You Try It!” section using archival methods to understand students’ participation in the research day. Finally, we spent time approaching problems effectively and evaluating the quality of a solution in the “You Try It!” section on survey construction.

- **Goal 3. Ethical and Social Responsibility in a Diverse World**

You will apply ethical standards to evaluate psychological science and practice and you will develop ethically and socially responsible behaviors for professional and personal settings in a landscape that involves increasing diversity.

Sections Covered: Nonexperimental Methods

Explanation of the Goal: As psychologists, we want to study behaviors and mental processes. However, often it is not ethical to conduct a true experiment with experimental manipulations. Therefore, this chapter covered alternative methodologies under the topic of nonexperimental designs that allow us to understand behaviors that ethically we cannot manipulate.

- **Goal 4. Communication**

You will demonstrate competence in writing and in oral and interpersonal communication skills.

Sections Covered: Nonexperimental Methods

Explanation of the Goal: In Chapter 4, we have discussed the importance of communicating effectively. This is especially true during survey construction. Specifically, we have shown that by articulating questions thoughtfully and purposefully when constructing a survey instrument, we can strengthen research results and limit spurious outcomes.

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