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ETHICS AND VALUES IN PSYCHOLOGICAL SCIENCE

At the end of her junior year, Meghan applied for a summer research grant at her university. To her surprise, the grant was funded. She was provided with a stipend and paired with a faculty mentor who provided her with expertise and equipment. Most of all, she was given free rein to design and conduct her first original experiment. The experience was a great opportunity to include in her medical school applications. Interestingly, Meghan almost did not apply for the grant, despite encouragement from her Brain and Behavior professor who was quite impressed with her term paper on ethnic and gender differences in pain tolerance. "But, it's not like I can bring people to the lab and make them feel pain," Meghan had said. "There's no way that would be ethical." Her professor agreed, "No, you can't make them come in, but perhaps you could think of an ethical way to ask for volunteers and guide them through the experiment. Researchers do that all the time. How else do you think we have learned so much about how pain works?"

The scientific method is a profoundly powerful and versatile tool. In the relatively short period of history that it has been taught and practiced, life expectancy has increased, quality of life has improved, and our abilities to achieve new things and travel to new places have increased at a rate that was simply unimaginable a few centuries ago. In fact,

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the rate of technological advancement today was inconceivable even a few decades ago. The power of science—and what distinguishes it from other systems of thought—comes from its emphasis on objectivity and observation. Theories and hypotheses have scientific merit only to the extent that they generate testable predictions that are verified by data. Science requires us to set aside our personal opinions and assumptions, no matter how much we may want them to be true. Scientific findings can even challenge deeply held moral beliefs. No matter how effective science has been in explaining the world, there are those who interpret this objectivity as being cold and value-free, as if science is incompatible with conscience. That is simply not the case, and this book will demonstrate that science is actually built on and practiced with a set of values.

VALUES IN SCIENCE

What are scientific values? It is one thing to say that we, as students of a scientific discipline, value objectivity and observations. We would not have science without those, and that is why education includes courses on research methods, statistics, and laboratory techniques. However, there are other kinds of values in scientific endeavors; the kinds of values we will address in this book relate to concepts such as honesty, responsibility, and respect for the rights and well-being of the people or animals we study. These values are put into action through **research ethics**, *the principles used to define and promote acceptable behavior and discourage unacceptable behavior in scientific work.*

As Meghan's story illustrates, research ethics are often an extension of one's personal values. Even with limited training, Meghan realizes that she is facing some important ethical decisions. However, with experience comes an appreciation for how complex ethics can be and the fact that they encompass the entire research process. While Meghan considers the physical well-being of her volunteers, a lab group next door might be debating what to do with their data following a conference presentation, and her friend in the computer lab notices that, if he removes two unusual cases from his spreadsheet, he will have statistically significant results. Researchers with different levels of experience, motives, and opportunities may come up with different, even contradictory, answers if they rely solely on their gut feelings. This is why professionals across all scientific disciplines have set aside time to discuss, develop, and teach about ethics.

The purpose of this book is to introduce you to the ethics of research in psychological science. Although the values and principles addressed in this book are drawn from our experiences in psychology, the vast majority of these principles also apply to anyone conducting research—especially in fields like sociology, communications, exercise science, and many other subjects that make people the focus of their studies. Psychology and other disciplines have clinical and practical applications as well. There are ethics specific to psychotherapy, psychological assessments and testing, serving as an expert witness in court, and so on. Those principles are every bit as important as research ethics but are beyond the scope of this book. Our focus is on the **responsible conduct of research (RCR),** *understanding and following the principles, rules, and guidelines for conducting research in an ethical manner* (Shamoo & Resnick, 2015). We will introduce you to research ethics through an examination of values rather than specific actions to take or to avoid. With these values as a foundation, each of the subsequent chapters will illustrate how they appear in the research process, the standards for preventing ethical problems, and ways to make ethical decisions as you conduct research yourself.

VALUES AND THE INTEGRITY OF RESEARCH

Most national governments have various agencies that fund scientific research. In the United States, the Department of Health and Human Services houses the Office of Research Integrity (ORI, see *Additional Resources* at the end of the chapter for more information). ORI establishes regulations and provides oversight of research within any organization or institution that receives research funding from the government. Most colleges and universities, whether public or private, receive some form of federal funds, such as grants for research, training opportunities, or equipment. Therefore, they are obligated to follow the regulations put forth by ORI. For example, you will read in Chapters 4 and 5 that institutions must have committees review and approve research on human subjects. In addition to setting these rules and regulations, ORI investigates allegations of misconduct while also promoting integrity through education on RCR. It seems favorable to emphasize "good citizenship" among researchers (Steneck, 2007), rather than focus on strict warnings and harsh punishments. Therefore, ORI proposes that the responsible conduct of research is best thought of as a commitment to a set of shared values:

- *Honesty*: conveying information truthfully and honoring commitments

- *Accuracy*: reporting findings precisely and taking care to avoid errors

- *Efficiency*: using resources wisely and avoiding waste

- *Objectivity*: letting the facts speak for themselves and avoiding improper bias (Steneck, 2007, p. 3)

This is not a complete list, but it is a good place to emphasize that scientific values are not simply nice concepts to think about, nor are they just ways for researchers to be polite. These values are necessary for scientific knowledge to progress, as we will see with the value of openness.

OPEN SCIENCE

The concept of openness, related to honesty and accuracy described above, promotes more effective research in a number of ways but largely because it facilitates **replication**, *repeating research methods with different investigators in different locations to test whether the same results are observed.* Replication benefits science in several ways, such as identifying Type I errors, which you may have learned about in a statistics course. These type I errors, also called *false positives* occur when a statistical test produces significant results, but the results are actually due to random error. It is very difficult to detect a Type I error in a single study. However, if research findings can be replicated, it makes Type I errors seem less likely. Finally, replication can be used to detect experimenter effects such as carelessness, a misconception about the use of techniques or methods, and even outright dishonesty. Whatever the reason, research that does not replicate is likely to have less impact.

Despite the importance of replication, historically it has not been practiced in psychology, or in any other fields for that matter. This is largely the product of two connected factors: how scientific journals select what to publish and how university administrators evaluate their faculty. To a large extent, deans and department chairs expect their faculty to publish research frequently to be awarded tenure, get promoted, and earn merit pay. Meanwhile, editors want to publish new, statistically significant findings to elevate the status of their journal. Because editors are not looking for replications of previously published research, faculty have little motivation to spend time on it. In fact, it can cost faculty by occupying time and resources that could be spent trying to produce the new findings editors are seeking. As a consequence, scientific disciplines have not been efficient at weeding out false positives, experimenter effects, and dishonesty.

The concern over replication has led to a recent movement in psychology to openly share data so that other scientists can confirm or replicate the findings. In 2014, the Center for Open Science (COS) was created to promote three core values in science: *openness*, *integrity*, and *reproducibility* (Nosek, 2017, p. 6). Their mission is to change the culture of scientific practices to an open science framework where researchers collaborate on projects by sharing data and other important components of their research—these are covered in much more detail in Chapters 8 and 9. In short, by using larger data sets and including many different samples from multiple settings, scientists can test the strength of the overall effect and the reproducibility of their findings.

It is somewhat ironic that an effort to encourage replication has led to what some call the **replication crisis**, *the concern among a large number of scientists (led by psychologists) that many—perhaps even most—peer-reviewed studies cannot be reproduced by other researchers*. This arose from a project initiated by founders of the COS in which dozens of researchers around the world went about replicating 100 published studies in psychology, including both experimental and correlation studies (Open Science Collaboration, 2015). Many were surprised to learn that only 36% of these replication studies reproduced the original results. Naturally, there may be good reasons why so many studies failed to replicate, and it may be that some of the replication studies themselves produced errors. Regardless, openness in science is an example of how the values driving ethical principles are not just nice, they are necessary.

PSYCHOLOGISTS' CODE OF ETHICS

The American Psychological Association's (APA) *Ethical Principles of Psychologists and Code of Conduct* (2016) are standards of behavior for psychologists in their professional practice, which may include any combination of teaching, research, supervision, consulting, program design and administration, and counseling and clinical work. The code is based on five broad principles—the values underlying all psychological work, as shown in Table 1.1.

Understanding these five principles helps psychologists identify situations in which ethical issues may arise and then consider ways of preventing issues or resolving problems. We have already encountered some of these principles in Meghan's situation. She had the intuitive sense that she should not cause harm, and that people of various backgrounds are likely to experience the same painful stimuli differently. Rather than relying on her intuitions, Meghan can actually turn to the APA ethics code to find that her concerns relate to nonmaleficence and her respect for people's rights and dignity.

TABLE 1.1 ■ The APA's Ethical Principles and Code of Conduct	
Principles	**Definition**
Beneficence and Nonmaleficence	Psychologists will promote well-being (*beneficence*) and avoid doing harm (*nonmaleficence*).
Fidelity and Responsibility	Psychologists uphold trusting relationships within their community and working relationships.
Integrity	Psychologists will behave with honesty and truthfulness in all professional activities.
Justice	Psychologists should treat others with fairness. This includes recognizing their personal biases and the limits to their expertise.
Respect for People's Rights and Dignity	Psychologists must work to protect the rights of individuals (privacy, confidentiality, autonomy) and respect cultural differences to avoid prejudices.

With experience, psychologists find themselves working in a variety of situations with more nuances than five broad principles can address in any detail. Therefore, the ethical principles are further codified in 10 *Ethical Standards*. These standards are directives, describing how the principles should be addressed in practice. For research psychologists, Meghan included, avoiding harm and respecting dignity can both be seen in standards relating to *informed consent* (a central topic of Chapter 4); psychologists must communicate and document that they have obtained permission from the individual participants in their studies. Similarly, psychologists prevent harm and demonstrate respect by providing anonymity and confidentiality as much as possible, thereby preventing potentially embarrassing or damaging information from becoming public.

The APA's *Ethical Principles of Psychologists and Code of Conduct* can be found online (see *Additional Resources* at the end of this chapter). As we move through each chapter, we will identify the principles and standards that will best inform each ethical dilemma or scenario. We will rely on both the APA's ethics code as well as general research values identified by ORI and other organizations. An important set of values to consider are those related to collaborations with others.

ETHICS AND THE STUDENT SCIENTIST

The ethics of psychological research are universal: We expect colleagues, students, and mentors to understand and abide by the same set of principles. Nonetheless, there are some differences in how ethics might be applied in contexts where only professionals are involved, when the project is entirely conceived and conducted by students, and, perhaps most commonly, when students and their mentors work together. Consider the following research scenarios:

- An I/O (industrial/organizational) psychologist examines whether employee substance abuse problems might contribute to dishonesty in the workplace.

- A neuroscientist exposes laboratory rats to extreme stress, then dissects the brains to examine changes in brain volume.

- After completing data collection, a cognitive psychologist finds that his statistical tests fall just short of significance. He decides to eliminate an outlier or two from his data and runs the same test again, this time getting statistical significance.

Do these represent ethical problems? Does it make a difference if the researcher is a student rather than a professor? In each case, it is worthwhile to answer both questions. For the I/O psychologist, it is possible to collect data from a wide range of people in many different locations, thereby making anonymity very easy to achieve. In contrast, imagine a student at a liberal arts college who does not have the same resources and professional contacts. Her project is more likely to involve a survey of her peers. At a small college, she will have to go through a much more sophisticated process to ensure she does not inadvertently discover the identity of someone with a substance abuse problem or a history of cheating. This could even mean sacrificing the quality of the research by eliminating personally identifying questions about race, gender, major, and year in school. In these two situations, we see that the same ethical principles apply, but they call for somewhat different methods of implementation.

It is not necessarily the case that all student research requires a different approach to ethics, but we believe it is well worth the effort to consider each study individually and before they are underway. For the neuroscientist, the use of lab animals in this way requires a strong likelihood of significant medical advances. That holds true when a student assistant is in the lab, but is far less likely if the research is proposed for a student's independent capstone project. For the psychologist manipulating his data set, that is a dubious practice no matter what the researcher's status is.

There are many different stages in the research process, and so there are many varieties of research principles to understand and follow. Despite this complexity, there is a relatively simple set of steps for viewing ethics from the perspective of the student scientist. We call these steps the PASA model, and we encourage students and mentors to work through these steps together before embarking on any research project.

Principles. Make sure all participating individuals understand the ethical principles that are involved in the project, including the ethics of working with human subjects, managing and storing data, writing and reporting results, and so on. Without a solid understanding of the principles, it would be difficult for anyone to complete an ethical project, whether a student or a professor.

Assumptions. People often make assumptions about proposed research that, if mistaken, may lead to a violation of ethical principles. It is imperative that students, collaborators, and mentors understand and address those assumptions. For example, imagine an individual on an ethics review committee who is asked to approve the neuroscientist's study described earlier. The proposal would include the details of treating and euthanizing lab animals, and it would be easy to assume that the neuroscientist is knowledgeable, competent, and honest enough to follow the ethical principles. However, that

assumption would no longer hold if student lab assistants have been poorly trained and left unsupervised.

Status of the researcher. Next, examine how those assumptions might be challenged by the presence of a student on the research team, or when the student is acting as an independent researcher. Obviously, students are unlikely to have the same level of competence and experience as a professor, especially in the case of the neuroscientist. Moreover, students are less likely to have the resources and contacts to collect data at workplaces around the country, as in the example of the substance abuse research. Students may not be aware of the ethics of conducting and reporting statistical analyses, simply because learning the procedures themselves can be challenging and take time.

Adapt the rules to fit the context. With a full understanding of the principles, assumptions, and the unique situations involving students, you should be able to establish a set of guidelines to ensure ethical behavior. Again, the values and principles remain the same, but may be addressed in different ways. For the substance abuse research, the student may have to ask fewer questions to avoid the potential to identify individual participants. Ethics review committees may ask for evidence that the lab assistants are fully qualified; perhaps a certificate of completing an ethics course or proof that they each completed a prerequisite lab course. For a student learning about statistical analyses, it might actually be OK to manipulate the data if (and only if) the research context is purely to help the student learn about the consequences of various practices. In each example, the context makes a huge difference.

LOOKING FORWARD

So far in this chapter, we have seen that the objectivity of science serves to keep individuals' beliefs, hopes, and assumptions in check. However, science is far from a value-free enterprise. Our values are spelled out in the ethical guidelines we follow and reflected in our behavior toward others, ranging from people who volunteer to participate in studies to the community who stands to benefit from our efforts. The purpose of this book is to help you confidently engage in the responsible conduct of research.

When you look at the table of contents, you will see that the book is laid out to address all of the steps in the research process in roughly the same order that researchers encounter them, particularly the chapters on protecting human subjects, gaining IRB (Institutional Review Board) approval, data analysis, and writing up research results. Other topics are not necessarily steps in the research process but focus more on the environment in which research occurs. That is the case in Chapter 2 in which we consider academic freedom and supervision; these topics include questions of what rights and responsibilities go along with being a student researcher or mentor. Within each chapter, you will likely notice the same underlying structure. Each chapter begins with a vignette that illustrates a type of ethical decision or conflict. These are actual events that have occurred with our own students or with students that our colleagues have supervised at other colleges and universities. You will learn about the values and ethical principles that are the focus of the chapter, and see how they can be applied to various research activities. Finally, each chapter includes how the principles may vary according to the context and, in several chapters, guides student researchers through the ethical decision-making process.

Chapter Summary

- Scientists engage in the responsible conduct of research by establishing, teaching, and practicing research ethics.

- The Office of Research Integrity bases its work on four key values: Honesty, Accuracy, Efficiency, and Objectivity.

- The Center for Open Science emphasizes the three values of openness, integrity, and reproducibility. The center has demonstrated that these values are not just matters of behavior, they are fundamental to the development of knowledge in any discipline.

- The American Psychological Association has established a code of conduct based on the five principles of *beneficence* and *nonmaleficence*, *fidelity* and *responsibility*, *integrity*, *justice*, and *respect for people's rights and dignity*.

- Research ethics are universal: Everyone engaged in psychological research is expected to follow the same rules whether they are undergraduates or senior faculty members with tenure.

- Despite the universality of research ethics, being a student puts you in a unique position. In order to ensure ethical behavior for student researchers, students and mentors may apply the PASA model to their project before the project begins.

- The PASA model addresses four things: understanding the principles, examining assumptions, considering the status significance of having a student researcher, and making adaptations to fit the context.

Discussion Questions

1. The Office of Research Integrity describes four values important to scientific research. The Center for Open Science names three. To what extent do these two organizations identify the same underlying values, despite using different names for them? In what ways do their values differ?

2. Consider the principles of *fidelity* and *responsibility* as you read this scenario:

   Avery showed up late for the lab group meeting today, and once again, his assigned work was sloppy and incomplete. That makes the third time in the past five meetings. Today, he was supposed to arrive with edited photocopies of an informed consent document for research participants. Not only did he fail to make copies, but the supervising professor had to make additional edits before printing the document. She let Avery know very clearly that he is no longer just slowing down his group's progress, he is actually beginning to harm their work.

   a. How do the values of fidelity and responsibility relate to Avery's behavior in this example? Can any other APA values be used to address Avery's behavior?

3. Think about the principles of *beneficence* and *nonmaleficence* in the following scenario.

   Dr. Ortiz has enrolled one of his strongest students, Camille, in an honors research practicum for juniors. Although he is confident she will do an excellent job, he does have a big concern. Namely, honors students are to generate ideas for their senior theses based on their practicum, and then design and conduct their own study their senior year. Dr. Ortiz wonders exactly what an undergraduate—even a very accomplished one—should attempt when it comes to a topic like suicide. Should students be allowed to conduct research on such a sensitive topic, and with volunteers who could potentially be in crisis?

   Using the guide below, apply the PASA model to help Dr. Ortiz translate the principles of *beneficence* and *nonmaleficence* to student researchers.

   A. Principles. Think about your expectations for researchers working with individuals who have suicidal thoughts. What are some specific ways they might incorporate *beneficence* when designing a study, or act on it when gathering data? How about *nonmaleficence*?

   B. Assumptions. To address the principles in the ways you described, Dr. Ortiz must have certain traits, knowledge, skills, and credentials. What are some of these qualities?

   C. Status. Are any of these qualities unlikely to apply to an undergraduate like Camille? If so, how would that affect her ability to engage in the same behaviors you identified in A, above?

   D. Adapt. Considering the differences between the professor and the student, how might you adapt the expectations you set in A, above? Are there any restrictions or additional actions you would suggest?

Additional Resources

American Psychological Association

The APA is the largest professional organization for psychology. Their ethics code is very influential in this book. If you would like to read sections of it for yourself, it is freely available at http://www.apa.org/ethics/code/

Office of Research Integrity

ORI provides a vast collection of resources. Perhaps the best place to start is with the e-book, *Introduction to the Responsible Conduct of Research*, quoted earlier. It is available in a web version or as a downloadable file at https://ori.hhs.gov/ori-intro

The main web page will give you a look at all of the resources, including cases of research misconduct, videos, and infographics. https://ori.hhs.gov/

Center for Open Science

You can visit the COS website to learn more about the work they do to improve the scientific process: https://cos.io/

Their flagship project is known as the Open Science Framework. This is a web-based system that helps scientists manage the workflow of their research in a way that encourages replication and the sharing of data and other resources.

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