1 21ST CENTURY PSYCHOLOGY

How did modern psychology come to be? Providing the answer to that question will be the task of this textbook. It will take quite a few pages to reveal the full answer to that question because 21st century psychology is the product of a long history of intellectual effort in a variety of fields that predate psychology itself.

The oldest and most venerable of those fields is philosophy. How did psychology evolve out of questions that interested philosophers? Questions such as: How do people know anything? How should people live their lives?

Biology is another older field with which psychology shares many questions and interests. It is also the field that opened psychology to the study of other species in an effort to better understand the commonalities between humans and the rest of the natural world.

Still another set of fields that influenced psychology are the computational sciences. Psychologists quantify many things: IQs, values of dependent variables, correlations between measurements, and much more. Some psychologists create mathematical models to explain experimental observations. Researchers in cognitive psychology and artificial intelligence may write computer programs designed to explain or simulate behavior. Statistics and psychology have a long history together as well.

The social sciences are a newer set of fields that include economics, sociology, anthropology, linguistics, geography, and political science. They are like close family because psychology, too, is a social science. The social sciences are relative newcomers compared to philosophy, biology, and the computational sciences but they also contributed much to the rise of psychology.

The chapters that follow will show how psychology emerged from all of these fields to claim a disciplinary territory of its own in between all of them. The text will first go back deep into human prehistory to discover the oldest vestiges of human behavior. From there it will visit psychology's "borders" with philosophy, biology, the computational sciences, and the social sciences. The goal of those visits will be to see how psychology incorporated questions from those disciplines and integrated them into a new, comprehensive, and integrated science. At the same time, the text will focus on the big ideas, the eminent thinkers, and the large-scale external forces that led to 21st century psychology. The goal of all that effort will be to answer the question: How did modern psychology come to be?

This chapter will begin by examining historiography, the study of history itself. In many ways this psychology course may be different from any other psychology course. For one thing, this course is history as well as psychology. So, knowing a little about how the study of history is conducted is necessary for a proper understanding of the dual nature of this course.

Next will come a brief look at the state of psychology today in order to give a clear picture of the endpoint of psychology's history. Historians already know the end of the story, but they wish to know the details that led to it. By the end of this chapter a clear picture of psychology's present should emerge. The text will then venture out to explore the details of psychology's past.

HISTORY AND PREHISTORY

Before looking at the history of psychology, an investigation of **history** itself is in order. History is more than the simple recounting of past events, and the study of history is not as simple as it might first seem. The recent attempts to "cancel" historical figures and to disallow the teaching of critical race theory speaks to the complexity of studying history. Historians depend on records and documents as their primary source materials. From their analyses of those materials, they attempt to reconstruct and interpret the past. Naturally, when such materials are nonexistent or lost, historians cannot accurately recount the past. Thus, the study of history is impossible prior to the advent of human records, the earliest of which are less than 10,000 years old. The earliest human writing may be symbols scratched on tortoise shells in China that are about 8,800 years old (Li et al., 2003). Anything in the past that happened before humans began keeping records falls into the realm of **prehistory**. The study of prehistory is primarily the province of archeologists and anthropologists; they slowly and patiently sift through ancient human sites searching for cultural artifacts (e.g., pots and weapons) or biological remains (e.g., teeth and bones) that are often the only evidence of humankind's distant past. Chapter 2 will recount that longest period of human existence and summarize the evidence of over four million years of human prehistory. Psychologists, too, are discovering an interest in the distant past (Henley et al., 2020).

Zeitgeist

So, history itself goes back less than 10,000 years. But *hominins* (human-like species) have existed for as long as four million years (Hobolth et al., 2007). Thus, the study of history only covers a tiny sliver of time that humans and predecessor species have lived on this planet. The study of history is further complicated by the inescapable fact that historians live in a particular culture and time, their own, as they attempt to document the past. This phenomenon, often labeled with the German word, ***zeitgeist***, is extremely important to understanding the past. People live in a constantly changing cultural, moral, and intellectual matrix. Sometimes, *zeitgeist* changes are so gradual and subtle that they nearly go unnoticed. The world changes, but those changes are often subtle. In the movie *Bullitt* (D'Antoni & Yates, 1968), for example, it is possible to see how much the world has changed. In that movie, Steve McQueen plays a San Francisco detective working a complex murder case. Throughout, he must stop at pay phones to call into his police station. Today, of course, a detective might communicate by radio or cell

phone; pay phones are now practically nonexistent. To put it another way, our *zeitgeist* no longer includes pay phones; they have become nearly as uncommon as buggy whips, boot scrapers, and lap blankets (all of which were common items during the Victorian Age). So, historians not only have to be faithful reporters of the past, they also must decipher and report the *zeitgeist* surrounding historical events. In the *Bullitt* example, that might mean explaining that wireless communication was extremely rare in 1968, that public telephones were much more available then than they are today, and that the nearly universal presence of cell phones today is a recent phenomenon. *Zeitgeist* also plays a large role in cancel culture where many historical figures, including psychologists, are being judged morally not by the era they lived in but, rather, in terms of the present. *Zeitgeist* is a word many psychology students learn for the first time while taking this course. In the course of your studies you may need to understand the *zeitgeist* of other times and places while temporarily leaving that of the early 21st century behind.

Another striking example of *zeitgeist* change over the last 50 years revolves around the issue of civil rights in the United States. In 2008, an African American, Barack Obama, was elected president. In his election night address at Grant Park, Chicago, he said:

> If there is anyone out there who still doubts that America is a place where all things are possible; who still wonders if the dream of our founders is alive in our time; who still questions the power of our democracy, tonight is your answer.

What Obama said, in other words, was that the *zeitgeist* of the United States had changed and that his election was the proof that it had. In 1964 in Philadelphia, Mississippi, three civil rights workers, James Chaney, Andrew Goodman, and Michael Schwerner were murdered because of their attempts to add African Americans to the voting rolls in Mississippi. Since then, the United States and Mississippi have changed in many ways. Few, if any, historians back then would have predicted that an African American man would be elected president as early as 2008. That early a date would have seemed highly unlikely in the *zeitgeist* of the United States in 1964.

Knowledge of history is necessary to appreciate how the *zeitgeist* changes. Often, the historical changes that take place during people's lifetimes are too subtle for them to sense a change in the *zeitgeist.* For example, nearly all cars have had four tires, a steering wheel, and an ignition key. Thus, it is hard to appreciate how people traveled before cars came along, or to imagine what kinds of vehicles they will be driving in the future.

THEN AND NOW
FIRST CAR IN TOWN

In the town where I live and teach, the first automobile arrived in 1912. Before then, most people walked, rode a horse or a mule, or traveled in a wagon drawn by an animal. Consequently, what to me today would be a short shopping trip to the next town, a distance of six miles, would have been an all day affair for people in my town before cars and paved roads became commonplace. It is hard for me to imagine devoting a whole day to a six-mile shopping trip, or to not have an automobile handy at all times. So, a six-mile trip now is not equivalent to a similar length trip in 1912. The *zeitgeists* are very different.

The *zeitgeist* of psychology, too, has changed in many ways over the course of its history. Some obvious examples include the role of women in psychology, discrimination against minorities, and changes in technology. Today, women in the Western world currently enjoy a newfound degree of freedom and opportunity. In other parts of the world, however, their status remains at or near traditional levels. The role of women is changing in the areas of equal rights, #MeToo, legal reform, and fighting gender-based poverty.

Racial discrimination, too, has a long history. In the United States the enslavement of African Americans and its abolition led to many long-term historical consequences that are still evident today. For example, Lee et al. (2008) find that rates of homicide among white Americans are higher in rural counties in states that were members of the Confederacy (1861–1865) than in those rural counties that were not. They believed that the frontier tradition of settling disputes violently remains a legitimate method today in the rural American South, and they contended that the culture of violence created by slavery has lingered into the present. They further argued that those cultural factors, and not resource deprivation, better explained their data. Perhaps the conviction of Minneapolis police sergeant Derek Chauvin for the murder of George Floyd may mark a change toward less discrimination in the history of race relations in the United States.

Technological change is yet another agent in history, one whose effects seem to accelerate over time. The pace of technology is quicker now than it ever has been. Note how quickly bulky car bag phones became all-purpose, palm-sized, smart phones. The study of cell phone use is a new topic in psychology. A recent search of PsycINFO, for instance, found 2,957 hits for "cell phone" with the earliest one written in 1998.

Historians of psychology, too, must convey the facts of the past but they must also describe the sociocultural matrix in which those facts first appeared. All of the following are more than facts: women were unable to matriculate in most colleges in the 1890s, African Americans shed the shackles of slavery but still suffered severe discrimination from then to the present, and the internet has changed how people communicate. Facts alone do not a history make. Those facts must be understood in their original contexts and also in how they changed today's *zeitgeist*. Every chapter after this one will begin with a *zeitgeist* section designed to set the larger historical scene for each chapter.

LEARNING OBJECTIVE

1. Imagine what the *zeitgeist* of where you live was like 100 years ago.

PERSONS IN HISTORY

Historians cannot study every last person who ever lived, even if they wanted to. Instead, historians must select certain individuals for study. Typically, those individuals tend to be members of elites, well documented, and males. Think of Julius Caesar, Isaac Newton, Napoleon Bonaparte, or Albert Einstein. Women, of course, are not entirely excluded from historical analysis but

appear less often in histories of all types. Recall Celtic warrior-queen Boadicea, the scientist Marie Curie, Revolutionary War hero Molly Pitcher, or psychologist Mary Whiton Calkins. That historians select certain persons and exclude others is another reason why history is not just the simple recounting of past events. That being said, it is clear that some people from the past deserve more scholarly attention than others. Those people are more eminent. **Eminence** is prevalent in nearly every human endeavor, including psychology. Historians and others may ascribe greater eminence to one person over another. Much of the study of history consists of examining the lives of eminent people. The same is true in the history of psychology. Below is a list of some eminent psychologists from the 20th century. However, it is unwise to study history only via the lives of eminent people, be they warriors, kings or queens, scientists, or psychologists. Listed below those selected as eminent are many worthy and hard-working individuals. Not paying attention to them as well makes for an incomplete history. Historians of science, too, must balance the relative contributions of eminent scientists against other important factors like "social milieu . . . and the institutional structure of scientific investigation" (Lewontin, 2009, p. 19).

The history of psychology also includes the study of men and women who first discovered scientific facts or applied those facts to particular populations, or integrated facts or applications into theories. Again, it is all too easy to overstate the role and importance of psychology's pioneers. On the other hand, it would be a serious mistake to ignore them altogether. So, the many psychologists in this text represent only the visible tip of psychology's iceberg. Many more and mostly unknown psychologists have worked long and hard to create what psychology is today.

One problem is that there are so many psychologists out there. It's not possible to look at them all. Who deserves further examination? As in any discipline, some psychologists are more eminent than others. Psychologists have long been interested in studying what makes one person more prominent or eminent than another. Cattell (1905), for instance, began a project designed to identify eminent American scientists. Given the *zeitgeist* of his times, he titled his list "A biographical directory of American *men* (italics added) of science." In 2002, Haggbloom et al. published a list of the 99 most eminent psychologists of the 20th century. That list makes a convenient starting point for discussing the role of individuals in psychology. Table 1.1 lists those 99 psychologists. Interestingly, the highest-ranked woman on the list is Elizabeth Loftus, at number 58. Her ranking, along with the inclusion of only four other women, shows that the *zeitgeist* of psychology today is still not evenly balanced in terms of gender. However, that may change in the future as many more women than men are enrolled as psychology majors and graduate students in American universities today. In the chapters to come, many of the psychologists listed in Table 1.1 will appear as well as eminent men and women from other disciplines.

A newer list (Green & Martin, 2017) extended Haagbloom et al.'s by means of an online game that allowed players to rate the eminence of a pair of psychologists from a list of 402 historical individuals. They recorded responses from 892 game sessions that yielded 66,852 ratings. Participants gave their gender and age; the researchers deduced geographic region from IP addresses. Their top 20 list included nine names that appeared on Haagbloom et al.'s list (see Table 1.2). Green and Martin performed additional analyses separating out the results by gender, age of the respondent, and geographic differences. Women rated Elizabeth Loftus higher

than did men (11th vs. 36th) and ranked the 33 female psychologists on the list higher in their mean rankings (121st to 213th). Women ranked Darwin, Watson, and Hull outside of their top 20 while all three were in men's top 20 lists. In terms of age of the respondents, only Skinner and Freud appeared on the lists of all four age ranges while Wundt, James, Bandura, Piaget, Edward Thorndike, Pavlov, and Watson appeared on three of the age ranges. There were 657 respondents from North America (United States and Canada), 111 from Europe, and 104 from South America. Only 20 participated from Asia and Oceania and those were not included in the analyses. Robert Thorndike, Piaget, and Watson were the only names that appeared from all four regions. Pavlov, Freud, James, Edward Thorndike, Milgram, Spearman, Skinner, Wundt, Darwin, and Bandura were named by two regions. The data for both Thorndikes, the two Allports, and the two Cattells were a methodological problem needing solution.

TABLE 1.1 ■ The 99 Most Eminent Psychologists of the 20th Century

1. B.F. Skinner	**24.** Ivan P. Pavlov	**47.** Arthur R. Jensen	**70.** Eleanor E. Maccoby
2. Jean Piaget	**25.** Walter Mischel	**48.** Lee J. Cronbach	**71.** Robert Plomin
3. Sigmund Freud	**26.** Harry F. Harlow	**49.** John Bowlby	**72.** 5.* G. Stanley Hall
4. Albert Bandura	**27.** J.P. Guilford	**50.** Wolfgang Köhler	**73.** Lewis M. Terman
5. Leon Festinger	**28.** Jerome S. Bruner	**51.** David Wechsler	**74.** 5.* Eleanor J. Gibson
6. Carl R. Rogers	**29.** Ernest R. Hilgard	**52.** S.S. Stevens	**75.** 74.5. Paul E. Meehl
7. Stanley Schachter	**30.** Lawrence Kohlberg	**53.** Joseph Wolpe	**76.** Leonard Berkowitz
8. Neal E. Miller	**31.** Martin E.P. Seligman	**54.** D.E. Broadbent	**77.** William K. Estes
9. Edward Thorndike	**32.** Ulric Neisser	**55.** Roger N. Shepard	**78.** Eliot Aronson
10. A.H. Maslow	**33.** Donald T. Campbell	**56.** Michael I. Posner	**79.** Irving L. Janis
11. Gordon W. Allport	**34.** Roger Brown	**57.** Theodore M. Newcomb	**80.** Richard S. Lazarus
12. Erik H. Erikson	**35.** R.B. Zajonc	**58.** Elizabeth F. Loftus	**81.** W. Gary Cannon
13. Hans J. Eysenck	**36.** Endel Tulving	**59.** Paul Ekman	**82.** Allen L. Edwards
14. William James	**37.** Herbert A. Simon	**60.** Robert J. Sternberg	**83.** Lev Semenovich Vygotsky
15. David C. McClelland	**38.** Noam Chomsky	**61.** Karl S. Lashley	**84.** Robert Rosenthal
16. Raymond B. Cattell	**39.** Edward E. Jones	**62.** Kenneth Spence	**85.** Milton Rokeach
17. John B. Watson	**40.** Charles E. Osgood	**63.** Morton Deutsch	**86.** 5.* John Garcia
18. Kurt Lewin	**41.** Solomon E. Asch	**64.** Julian B. Rotter	**87.** 5. James J. Gibson
19. Donald O. Hebb	**42.** Gordon H. Bower	**65.** Konrad Lorenz	**88.** 5. David Rumelhart
20. George A. Miller	**43.** Harold H. Kelley	**66.** Benton Underwood	**89.** 5. L.L. Thurston
21. Clark L. Hull	**44.** Roger W. Sperry	**67.** Alfred Adler	**90.** 5. Margaret Washburn
22. Jerome Kagan	**45.** Edward C. Tolman	**68.** Michael Rutter	**91.** 5. Robert Woodworth
23. Carl G. Jung	**46.** Stanley Milgram	**69.** Alexander R. Luria	

92. 5.* Edwin G. Boring	**94.** 5. Amos Tversky	**96.** Herman A. Witkin	**98.** Orval Hobart Mowrer
93. 5. John Dewey	**95.** 5. Wilhelm Wundt	**97.** Mary D. Ainsworth	**99.** Anna Freud

*Numbers with .5 indicate a tie in the ranking. In these cases, the mean is listed.

Source: Haggbloom, S.J., Warnick, R., Warnick, J., Jones, V.K., Yarbough, G.L., Russell, T.M., Borecky, C.M., McGahhey, R., Powell, J.L., Beavers, J., & Monte, E. (2002). The 100 most eminent psychologists of the 20th century. *Review of General Psychology*, 6, 139–152.

TABLE 1.2 ■ Overall Top 20 Rankings

NAME	
1. William James	**11.** Elizabeth Loftus
2. B. F. Skinner	**12.** Stanley Milgram
3. Wilhelm Wundt	**13.** Hermann Helmholtz
4. Sigmund Freud	**14.** Harry Harlow
5. Jean Piaget	**15.** Robert L. Thorndike
6. Charles Darwin	**16. Abraham Maslow**
7. Ivan Pavlov	**17. Hans Eysenck**
8. John B. Watson	**18.** Charles Spearman
9. Albert Bandura	**19.** Lev Vygotsky
10. Edward L. Thorndike	**20.** Solomon Asch

Bold names appeared in top 20 of Haggbloom et al. (2002).

Source: Green, C. D., & Martin, S. M. (2017). Historical impact in psychology differs between demographic groups, *New Ideas in Psychology, 47*, 24–32.

Green and Martin (2017, p. 31) concluded:

> historical impact is not a singular thing that extends homogeneously across the entire discipline. There are distinct, sizeable communities within the psychology for whom different historical figures have legitimately had greater impact than for other communities. Our efforts to measure impact should, going forward, include these differences so that we may attain a more accurate, more nuanced, more sophisticated understanding of our discipline and its history.

In the chapters that follow, only some of the eminent psychologists can become part of this history of psychology. Understand that there are many others who have contributed to psychology's path to the 21st century. That space does not allow them to be included in this text does not diminish their contributions.

LEARNING OBJECTIVE

2. Examine the two tables (Tables 1.2 and 1.3) showing eminent psychologists and list the ones you are familiar with, have heard of, or have never heard of.

TABLE 1.3 ■ Top 20 Rankings by Gender

Rankings by Women	Rankings by Men
1. **B F Skinner**	1. **William James**
2. Erik Erikson	2. **Wilhelm Wundt**
3. **Jean Piaget**	3. **B.F. Skinner**
4. **Sigmund Freud**	4. **Ivan Pavlov**
5. **Albert Bandura**	5. Charles Darwin
6. Abraham Maslow	6. John B. Watson
7. **William James**	7. **Sigmund Freud**
8. Carl Rogers	8. **Jean Piaget**
9. Charles Spearman	9. **Edward L. Thorndike**
10. Robert L. Thorndike	10. Clark Hull
11. Elizabeth F. Loftus	11. Hermann Helmholtz
12. **Stanley Milgram**	12. **Albert Bandura**
13. Alfred Adler	13. Ulric Neisser
14. Solomon Asch	14. Gustav T. Fechner
15. **Wilhelm Wundt**	15. G. Stanley Hall
16. **Edward L. Thorndike**	16. Gordon W. Allport
17. Harry F. Harlow	17. Kurt Lewin
18. Floyd H. Allport	18. **Stanley Milgram**
19. **Ivan Pavlov**	19. **Harry F. Harlow**
20. Hans Eysenck	20. Stanley Schachter

N.B. Figures on both lists appear in bold.

Source: Green, C. D., & Martin, S. M. (2017). Historical impact in psychology differs between demographic groups, *New Ideas in Psychology, 47*, 24-32.

IDEAS IN HISTORY

History also includes the study of ideas. People think up ideas, but afterwards those ideas may take on a life of their own. Few historians concentrate on the study of ideas, perhaps because the topic is so abstract (Watson, 2005). Certainly history itself can be viewed as a large collection of ideas: fire, clothing, agriculture, language, religion, time, government, education,

mathematics, and science, to name a few. Naturally, this text will focus more closely on ideas in psychology. Among some of the ideas covered will be: mind, evolution, morality, rationality, emotion, personality, and the unconscious. Many psychological ideas are also closely associated with the person who first had the idea (or, at least associated with the person historians link with the idea). The truth, however, is that most ideas do not have a one-to-one correspondence with only one person. Typically, ideas tend to be in the *zeitgeist* a while before someone comes along and synthesizes one or more ideas coherently. That is usually the person who becomes associated with the idea. History is full of such examples, both in general and in psychology. Darwin was not the first person to have the idea of evolution nor was Freud the first to think of the unconscious. Recall Pavlov's admonition, "If you want new ideas, read old books." Thus, the relationship of ideas and who first thought of them is anything but clear or simple. Truly original ideas emerging from a single mind are very rare.

TRENDS IN HISTORY

Just as historians cannot study every person, they cannot study every single event or idea either. So, historians conceptualize people, events, and ideas into higher-level categories or trends. Some of those categories may be familiar and include eras of history such as the Paleolithic (Old Stone Age) or Neolithic (New Stone Age), collections of related philosophical ideas such as empiricism or rationalism, or processes such as industrialization or globalization. Historical trends simplify the study of history by collecting similar events and ideas under higher-level categories. But, at the same time, doing so obscures the finer-grain details of history. Similarly, psychologists have long characterized their history with terms such as structuralism, functionalism, behaviorism, Gestalt psychology, humanism, and cognitivism. This text risks becoming a long list of *isms* and *ologies.* In the pages that follow, such an approach will be avoided and the attempt will be to relate the history of psychology as the exciting account it truly is.

PRESENTISM

One of the difficulties in writing history is presentism. Like everyone else, historians are captives of the present. They cannot travel back in time to view directly the people and events they wish to describe. At the same time, historians realize that they are also captives of their own *zeitgeist.* So, they must avoid interpreting the past using only their own experiences and knowledge. The trick then is to describe the past through the eyes of those alive at the time. Very often, the culture and mores of the past are so different from those of our own time that moral conflicts arise. For instance, how could George Washington have owned slaves? The answer is that the first president lived in a different time and place. He was a Virginia planter during a time when nearly all planters owned slaves. Should Washington's behavior be judged on the basis of today's morals? Many people today believe he should and that is one of the sources of cancel culture. Or, should Washington's owning of slaves be judged in light of the morals of his time? In today's world these are open questions.

Another view of presentism is that the present is the inevitable outgrowth of the past, or put another way, that the present is the only possible culmination of past events. This view, sometimes called "Whig History," interprets the past as justification for the conditions of the present. This view of presentism, too, is wrong. The present is not the triumphant and inevitable outcome of past events; so called "historical accidents" happen all the time. The present could easily have been quite different had someone made another decision or if something that did happen had not happened.

OBJECTIVITY

Psychologists know that objectivity is a necessary feature of research. The same is true for historians. However, many of the earliest histories were anything but objective. Some were written to flatter rulers, while others were written to glorify their own religious or political systems. Worse still, some historians believed they were writing objective histories but were not because they failed to realize their own inherent biases. So, history is not psychology. History has its own methods and problems. This text will try to respect history's methods (historiography) while telling the story of psychology. This text is, most of all, an intellectual history of psychology. As such, it will look at the history of ideas and how they contributed to the rise of modern psychology. At the same time, however, it will have to look closely at the thinkers who first contributed those ideas. It will also have to look at those ideas and thinkers in their own contexts and avoid framing those in the light of modern personal experiences or biases.

Why Study History?

Why study history? Philosopher George Santayana wrote, "Those who do not learn from history are doomed to repeat it." There are many lessons to be learned from history. One such lesson is fighting the last war. Soldiers and world leaders who fail to learn from past conflicts may prepare for future conflicts not realizing that conditions have changed. History is full of such examples. Generals in World War I, for instance, did not anticipate the devastating effects of the machine gun developed before World War I but never used in combat (Gilbert, 2004). Consequently, many millions of soldiers died unnecessarily prior to changes in military strategy and tactics. In psychology, Janis (1972) found that leaders made bad decisions under certain conditions. He called that phenomenon groupthink. The conditions that led to groupthink were the existence of a powerful, isolated, decision-making group, biased leadership, and the presence of high levels of stress. Janis discovered groupthink after analyzing the decisions that led to the disastrous Bay of Pigs invasion of Cuba in 1961. President Kennedy and his advisors were victims of groupthink during that historical episode. So, one important reason to study history is to avoid the repetition of past mistakes.

The American Historical Association (Stearns, 2008) suggests additional reasons to study history; to understand

- people and societies
- how historical change led to the present

- our own lives by comparing them to the lives of people in the past
- our own moral sense
- our own historical identity

With only minor modifications, these same reasons apply to the history of psychology; to understand

- psychologists and their ideas
- how psychology's past led to its present
- our ideas about psychology by comparing them to the ideas of people in the past
- the nature of morality and other longstanding questions
- psychology's historical identity

What is the relationship of the history of psychology to history itself? The history of psychology is a subfield of history but it is not independent of it. There are many instances where large-scale historical events (often labelled "big history") profoundly influenced the history of psychology.

Here are two examples of such large-scale historical interactions with the history of psychology. The first was the 1763 Treaty of Paris that concluded the French and Indian War (1754–1763). As a result of that treaty, the French government ceded all of North America east of the Mississippi river, except for New Orleans, to Great Britain (Schwartz, 1999). Among the many differences in 18th century French and British cultures was their dominant philosophies. French philosophy was dominated by rationalism while British philosophy was dominated by empiricism. (For now, think of rationalism as a philosophy that assumes that certain properties of mind need not be learned, and think of empiricism as a philosophy that emphasizes the environment's role in developing the mind. These philosophies will be examined in more detail inChapter 3.) Psychology enjoyed its greatest development in the United States, a part of North America settled by the British. Thus, American psychology owes much to British empiricism. American psychology today might be very different had the British lost the French and Indian War.

A second and more recent example was the exodus of Jewish intellectuals from Nazi Germany prior to World War II. When Hitler came to power in Germany in 1933, it was soon evident that Jews living in Germany were in mortal danger. One of the first signs of that danger was seen in German universities after the "Law for the Restoration of the Professional Civil Service" was enacted soon after Hitler came to power (Friedlander, 1997). Quickly, British and American scientists put together a plan to help prominent German (and later Austrian) scientists emigrate to Great Britain, the United States, and other countries. Before the Nazis came to power, Germany was the world's leader in science and about 25% of its scientists were Jews (Medawar & Pyke, 2001). Among the German psychologists who left Germany were: Charlotte Bühler, Kurt Goldstein, Kurt Lewin, Wolfgang Köhler, and Max Wertheimer. In addition, of the 20 chairs of psychology in Germany, seven emigrated (Sexton & Hogan, 1992).

Obviously, the future of German psychology was profoundly altered by Hitler's rise and Nazi policies. What would German psychology be like today had Hitler not come to power? On the other side of that coin is the question of what American psychology would look now if Hitler had never existed? Most of those European psychologists would likely have stayed home along with their ideas and insights. Had that been the case, American psychology would be much different. A closer look at psychology and its history is now in order.

LEARNING OBJECTIVE

3. Describe one or two events in your life that would represent "big history" or large scale events capable of altering history for many people.

21ST CENTURY PSYCHOLOGY

The first task will be to examine the present state of psychology. That analysis will serve as the beginning and endpoint of the text's look at psychology's history. Before looking at psychology's past, its present state must be understood.

Science and Psychology

Situating psychology within the larger framework of scientific disciplines is the first step. Psychology is a **science**. More specifically, it is a social science. Other social sciences include anthropology, criminology, linguistics, economics, geography, political science, and sociology. More broadly, and in addition to the social sciences, science can be further divided into categories of physical sciences, biological sciences, and computational sciences (see Table 1.4). Although these scientific disciplines study a wide variety of topics, they all share a common methodology: the scientific method.

Goldstein and Goldstein (1978) define science as an activity with three features:

1. searching for understanding
2. creating general laws and principles derived from those searches
3. testing those laws and principles experimentally

All sciences share the aforementioned features and also adhere to several other underlying principles: empiricism, replication, a public nature, and theory construction (Spatz & Kardas, 2008). All science is empirical, meaning that scientists strive to make unbiased observations about the universe. All sciences, including psychology, have developed methods and instruments for making those unbiased observations. What would you do in this class if your instructor suddenly asked you to produce a rock hammer? If you were taking a geology class that would not seem strange. Geologists use rock hammers to obtain samples to study. Similarly, cell biologists use petri dishes to grow microorganisms under controlled conditions. So, in that class using petri dishes would not seem strange. The message here is that all scientists adhere to the general principles of science mentioned earlier but the tools they use vary tremendously.

TABLE 1.4 ■ Categories of Science

Scientific Disciplines (Modified from American Association for the Advancement of Science Membership Categories)			
Physical Science	**Biological Sciences**	**Social Sciences**	**Computational**
Astronomy	Agriculture	Anthropology	Information, Computer, and Communication
Atmospheric	Biology	Linguistics/Language	Mathematics
Chemistry	Medical	Psychology	Statistics
Geology	Neuroscience	Economics	
Geography	Pharmacological	Geography	
Physics		Political Science	
		Sociology	
		Criminology	

Source: © Cengage Learning 2014

Science also checks and rechecks its observations to ensure that they are reliable. That is the principle of replication and it assures scientists that the observations made are real. Scientists reject observations that cannot be replicated. In addition, the vast majority of scientific results are made public by design. Publishing the results of experiments in journals, books, and other media has been a part of the scientific enterprise since the 1600s. Publication of results, combined with later attempts by other scientists to replicate those published results, makes science self-correcting. Not all scientific results are published, usually due to reasons of national security or business competition. Negative results (e.g., failures to find differences or relationships) also are rarely published. Lastly, scientists create **theories** to explain the observations they have made and to point the direction for future observations. Depending on the discipline, theories may be verbal explanations, mathematical formulas, or analogies. Theories are very important to science and vary depending on the discipline involved. Much of what this text covers will be the number of paths that led to scientific psychology. Like scientists in other disciplines, psychologists, too, have developed specific methods designed to help them understand nature's secrets.

Applied Psychology

Psychology is also an applied discipline, meaning that many psychologists take the scientific findings made by themselves or others and use them in specific real-world situations. Clinical and counseling psychologies are probably the most prominent examples of applied psychology, but they are by no means the only ones. Educational psychology and forensic psychology are other important examples. Scientific psychology and applied psychology go hand in hand, meaning that many of the results from scientific psychology can be easily and readily applied

in therapy, schools, on the job, or on the athletic field. In 1949, the Boulder Conference formalized the relationship between research (e.g., science) and therapy (e.g., application) in clinical psychology. The resulting Boulder model also designated the PhD, which is based on research, as the appropriate terminal degree for clinicians as well as specified that university psychology departments were the proper sites for clinical training. In 1973, an alternative model for clinical training, the Vail model, arose to promote training that emulated professional schools (e.g., medicine, dentistry, and law) instead of the more research-based approach of the Boulder model. In addition, the Vail model programs conferred a new degree, the PsyD (doctor of psychology), and their programs were no longer restricted to university psychology departments. In fact, some PsyD programs were housed in independent institutions (Norcross & Castle, 2002).

Today, the two models coexist in clinical psychology. Nathan (2000) argued that the Boulder model no longer applied because few practicing clinicians actually conduct their own research. Nevertheless, the Boulder model's basic premise, that research serves practice (and vice versa), still seems to apply. If nothing else, the requirement that clinicians and other practitioners maintain their knowledge base through regular and additional training throughout their careers reinforces the premise of the Boulder model. As Baker and Benjamin (2000, p. 247) noted, the Boulder model still makes up the "overwhelming majority" of clinical training programs today. Recently, Dautenhahn (2018) examined admission criteria, faculty modeling, structural factors, epistemology, and student factors to see if any predicted a specific clinical training model. She examined three models: clinical scientist, scientist–practitioner, and practitioner–scholar and found "the similarities are much more striking than the differences" (p. 41).

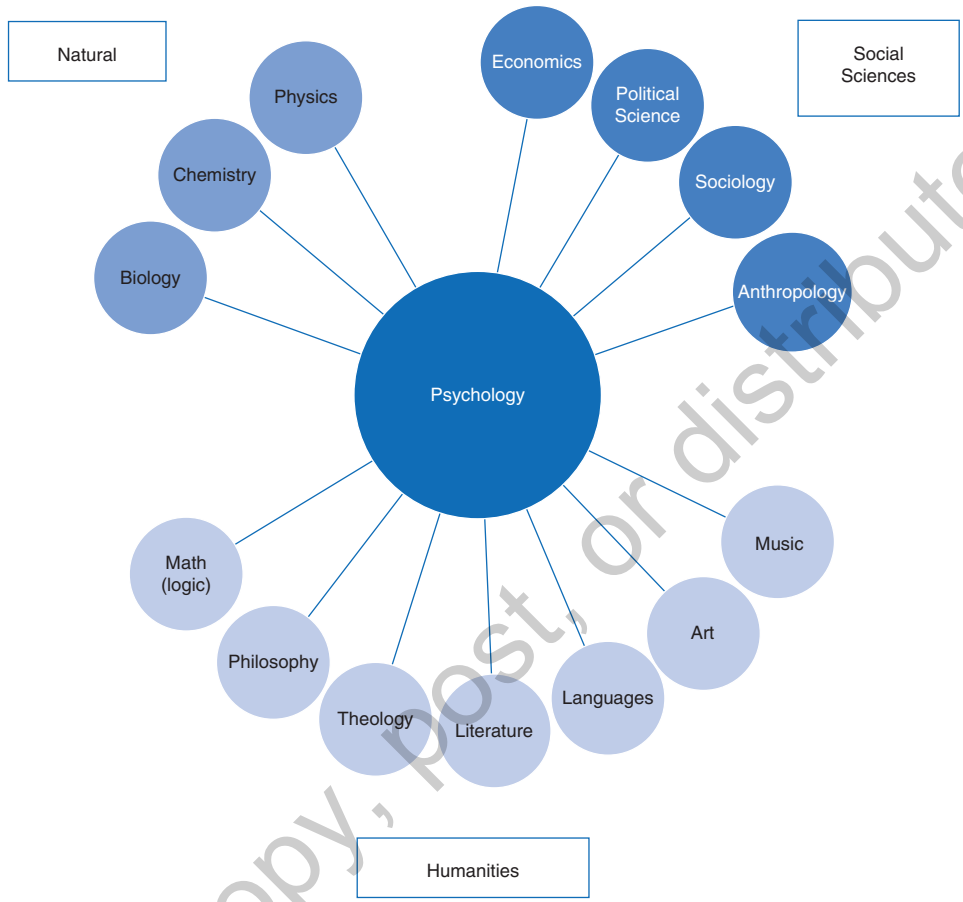
All of psychology's applied areas share the idea that the scientific results from psychology can be used in a wide variety of everyday practical settings. Today, applied psychology constitutes the largest portion of 21st century psychology.

Psychology's Borders

Gray (2008) noted that psychology fits neatly in the middle of nearly every academic discipline. Figure 1.1 shows how Gray placed psychology in a central position with the natural sciences, social sciences, and humanities arrayed around it. He added, "It would be impossible for people from any other department to draw a diagram nearly as elegant as mine that put their discipline in the center" (p. 30). The centrality of psychology creates *borders* between it and many nearby disciplines. Four disciplines: philosophy, biology, the computational sciences, and the social sciences have especially close borders with psychology. Over historical time those borders have moved and shifted. Those border realignments are historically important to understanding 21st century psychology, and this text will use those borders and their changes to explore psychology's history in later chapters.

One way to define psychology is to define what it is not. Psychology is not philosophy. But, psychology's oldest border is with philosophy. When humans freed themselves from simply existing day-to-day and were able to devote time to thinking about the universe, they

FIGURE 1.1 ■ The Centrality of Psychology



Redrawn from: *The value of Psychology 101 in liberal arts education: A psychocentric theory of the university.* Observer, 21(9), 29–32, 2008.

formulated questions that still remain unanswered. Some of those questions are well known: Who am I? What is true? What is the difference between right and wrong? What makes something beautiful? Those questions are of interest to nearly anyone and they are certainly of interest to psychologists. But, deep behind philosophy's border are topics that really only appeal to bona fide philosophers such as esthetics, logic, and metaphysics (the study of first principles such as the nature of being). The word around campus might be that philosophers think about problems while psychologists try to collect data in order to solve similar problems. In many ways, that oversimplification is true. However, along the border between psychology and philosophy, ideas still cross in both directions. Psychological research often causes philosophers to revisit old problems, and, more importantly, philosophical ideas continue to inspire psychologists to conduct research on problems that originate from the philosophical

side of the border. Interestingly, some philosophers have begun to apply psychology's methods to their own discipline under the banner of experimental philosophy or x-phi, for short. Knobe (2010), for example, showed that judgments of other's intentional actions can change by simply altering their moral status (e.g., harming the environment vs. helping it). The results were clear, in the harming scenario 82% of respondents agreed that the CEO was responsible for the harm. But, in the helping scenario only 23% agreed that he helped the environment. Knobe argued that, somehow, respondents are factoring in moral judgments in their decisions. He concluded (p. 51):

> The evidence simply does not suggest that there is a clear division whereby certain psychological processes are devoted to moral questions and others are devoted to purely scientific questions. Instead, it appears that everything is jumbled together. Even the processes that look most 'scientific' actually take moral considerations into account. It seems that we are moralizing creatures through and through.

Psychology's border with philosophy will be one of the main topics of the first section of this text. Psychology has expanded its borders into philosophy for a long time. Now, it appears that x-phi philosophers are attempting to take some of that territory back.

The border between psychology and biology is ancient and sometimes hard to discern because humans are living creatures, and there is much about our species that is of interest to both biologists and psychologists. Venturing further into biology's domain, however, there will come a place where biologist's and psychologist's interests diverge and the two disciplines become clearly distinguishable. While zoologists interested in animal behavior and psychologists interested in the biological bases of psychology are close neighbors along this border, topics such as body temperature regulation, species extinction, and salt balance are ones most psychologists would not consider part of psychology. Chapter 7 will look more closely at the history of research along the border between psychology and biology.

Yet another old border divides psychology and the computational sciences. Mathematics has long been an area of human interest. More recently, and with the advent of computers, artificial intelligence has become a topic that straddles the border between computational science and psychology. As machines and technology became more complex, it was no longer possible to dismiss notions such as intelligent machines. Indeed, intelligent machines, long a popular topic in science fiction, now exist, albeit in primitive form. Already, a small number of cities have adopted driverless buses (Cottrell, 2005). In time, they may replace bus drivers everywhere. Expert systems, natural language processing, and robotics are other artificial intelligence topics further removed from psychology's border with the computational sciences. IBM's Deep Blue played chess well enough to defeat the best human grandmasters and "thought" about chess in ways vastly different than how people do (Newborn, 2003). Gary Kasparov (2010, p. 17), Deep Blue's first victim, noted, "Today, for $50 you can buy a home PC program that will crush most grandmasters." Futurists wonder if humans will eventually create machines smarter than ourselves and worry what might happen to us as a species then.

The border with the social sciences is the most recent. Sociologists study topics related to psychology but at a different level of analysis. They also use different methods. The old saw is that psychologists study people while sociologists study groups of people inside social structures (e.g., jails, hospitals, and subcultures). Deep beyond psychology's border with sociology are purely sociological topics such as culture, social class differences, and social problems.

Another set of social scientists, economists, study how human decision-making has small-scale and large-scale effects on the economy. It is no accident that psychologists Herbert Simon and Daniel Kahneman won Nobel Prizes in economics (see Chapter 13). Their research straddled the border between psychology and economics.

Anthropologists, linguists, geographers, and political scientists, social scientists all, also study human behavior and thinking. Research in anthropology, linguistics, and geography has much to say about prehistorical and historical aspects of human behavior and thinking. Modern elections are only one arena in which research in political science excels. Political science research also has created the very practical techniques of polling and electioneering. Any candidates for public office who do not avail themselves of the skills of a competent pollster will likely lose their elections.

All of these disciplinary borders are conceptual, not real; they are fuzzy and dynamic. Crossing them is not like crossing an international border. Those international borders, very often, clearly mark a change in country, customs, and values. The border between Quebec and Maine is dramatically clear. While Maine is thickly wooded, Quebec is nearly treeless. While the rocks in Maine still lie where the glaciers dropped them 12,000 years before, in Quebec generations of farmers have picked them up and piled them into long stone fences. In Maine, because of the omnipresent forest, driving into a town is nearly always a surprise. In Quebec, however, towns are evident far off because of the fewer trees and the tall spires of Catholic churches. Over hundreds of years the Quebecois transformed their province until it no longer resembled its primordial state.

Psychology's borders with philosophy, biology, the computational sciences, and the social sciences are less evident than are international borders, and psychology's borders are more readily changeable. It is not always obvious that a disciplinary border has been crossed or that it is still in the same place when last visited. Speaking of borders and landscapes, notice how one part of the United States is often indistinguishable from another part. Interstates, malls, street signs, and even houses all look alike. Some things are different, however. Car license plates can provide one clue. By the end of this course it should be easier to tell when a disciplinary border has been crossed and psychology left behind.

LEARNING OBJECTIVE

4. Compare the borders you have noticed in courses you have taken. What indicated to you that you were in a new or different territory?

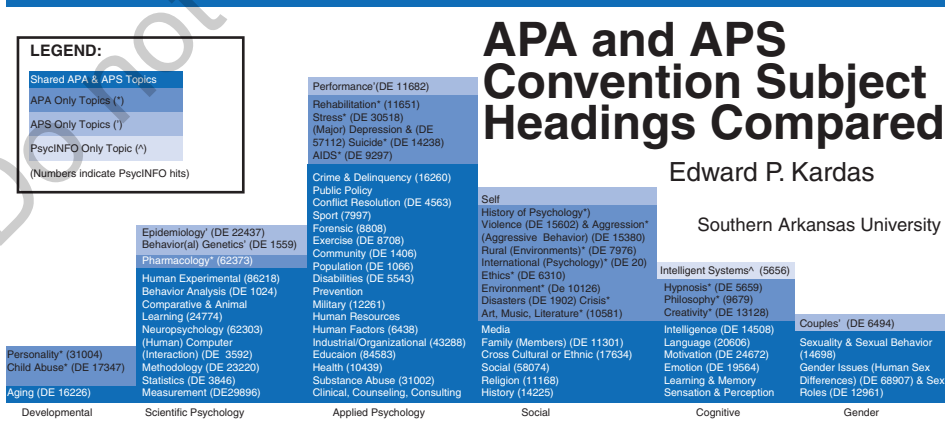
DEFINITION OF 21ST CENTURY PSYCHOLOGY

What is the definition of psychology? That is not a question that is easily answered. The standard definition in general psychology texts goes something like: Psychology is the scientific study of behavior and mental processes. That definition is accurate but leaves out many details. Psychology is at once a science, a practice, a way of thinking, and an academic discipline with definable boundaries.

Psychology's Subdisciplines

One way to understand psychology is to look at all of the parts that constitute it. Psychology consists of a large number of subdisciplines; that is an important detail in its definition. All of those subdisciplines should fit the general definition of psychology. Fortunately, others have already spent considerable time and effort delineating psychology's subdisciplines. The two major organizations in American psychology, the American Psychological Association (APA) and the Association for Psychological Science (APS) have categorized the parts of psychology, albeit in differing ways (Figure 1.2). The APA uses a list of 74 top-level terms to help authors classify the work they submit to the annual convention. Like the APA, the APS also has a list of terms designed for authors submitting work to their annual convention. The APS list has 73 top-level terms, but only 39 of those are shared with the APA list. Table 1.5 shows 57 subdisciplines in four categories: listed by APA and APS (39), APA only (17), APS only (5), and PsycINFO (1). When these lists are carefully analyzed and compared a picture of the many parts of 21st century psychology emerges. The 39 topics in common on the APA and APS lists provide a starting point. When topics not held in common are added, the picture becomes clearer. Think of the topics in the first column (APA and APS) as the baseline of psychology. Of the 17 topics in the APA only column, six deal directly with problems: HIV/AIDS, child abuse, disasters/crisis, stress, suicide, and violence. Meanwhile, two of the five topics listed in the APS only column, behavioral genetics and epidemiology, are on psychology's border with biology. PsycINFO, includes all of the topics listed but adds a unique one: intelligent systems. APS divides psychology into nine larger

FIGURE 1.2 ■ Psychology's Subdisciplines



categories: biological/neuroscience, clinical, cognitive, developmental, gender, I/O (industrial/organizational), methodology, personality/emotion, and social.

TABLE 1.5 ■ Psychology's Subdisciplines

APA & APS	APA Only	APS Only	PsycINFO
Aging	AIDS/HIV	Behavioral Genetics	Intelligent Systems
Behavior Analysis	Art/Music/Literature	Couples	
Clinical/Counseling/ Consulting	Child Abuse	Epidemiology	
Community	Creativity	Performance	
Comparative & Animal Learning	Disasters/Crisis	Self	
Conflict Resolution	Environment		
Crime and Delinquency	Ethics		
Cross-cultural/Ethnic	Hypnosis		
Disabilities	International		
Education	Personality		
Emotion	Pharmacology		
Exercise	Philosophy		
Family	Rehabilitation		
Forensic	Rural		
Gender Issues and Sex Roles	Stress		
Health	Suicide		
History	Violence		
Human Experimental			
Human Factors			
Human Resources			
Intelligence			

(*Continued*)

TABLE 1.5 ■ Psychology's Subdisciplines (*Continued*)

APA & APS	APA Only	APS Only	PsycINFO
Industrial/Organizational			
Language			
Learning and Memory			
Lifespan			
Measurement/Statistics/ Methodology/Computer			
Media			
Military			
Motivation			
Neuropsychology			
Population			
Prevention			
Public Policy			
Religion			
Sensation and Perception			
Sexuality and Sexual Behavior			
Social			
Sport			
Substance Abuse			

LEARNING OBJECTIVE

5. Reorganize the subfields of psychology shown in Table 1.5 by coming up with different higher-order headings. You may re-use some of the existing ones, but try to find other ways of categorizing psychology's subfields.

Psychologists interested in topics on the border with biology include those studying the brain and its workings, genetics, and drug effects. Also included here are those working with animal behavior. Clinicians, counselors, therapists, schools, businesses, soldiers, police officers, community developers, and athletes all look to psychology for specific answers to problems in their respective areas. Think of the opioid epidemic or dealing with the daily stresses of living as examples. Cognitive psychologists follow psychology's original goal, understanding the mind. But, they pursue that goal very differently than did the earliest psychologists. Today's cognitive psychologists may be interested in studying intelligence and language, among other similar topics. They are also looking at AI, the creation of cognition in nonhuman systems such as robots. Developmental psychologists explore the dynamic nature of human and animal life spans. They also investigate processes such as aging, maturation, and death itself. Gender, the biological division of males and females, imposes differences between them because of their different but complementary reproductive systems. At the same time, because men and women are members of the same species, similarities also exist. Industrial/Organizational (I/O) psychologists apply psychological findings to the world of work. Nearly any business now has experts in human resources who help hire new workers or impose behavioral standards on the job (e.g., preventing gender discrimination or eliminating adverse working conditions). I/O psychologists have also long labored to make the world a safer place to live and work in. Human factors psychologists ensure that workers can perform their jobs within the limits of human abilities and do so without incurring short or long term injuries. Most psychology majors know well the methodological part of the discipline through their courses in statistics and research methods. The science of psychology would not exist without careful attention to measurement, research design, or proper use of scientific equipment. The "why" question is within the domain of psychologists who study personality or emotion. Why did nearly a thousand people drink Jim Jones' Kool-Aid in Guyana? Why are the personalities two children in the same family so different? These are the types of questions by these psychologists. Social psychologists look at a wide variety of topics related to sociality ranging from the antisocial (e.g., crime and delinquency) to the highly social (religion). Modern multicultural societies, for example, may be composed of people with different ethnic backgrounds or religions. Daily news reports from around the world tell of strife and conflict in places where ethnicity or religion differ. Samuel Huntington (1996) identified eight "civilizations" or large groups that were similar ethnically or religiously: Western (United States and Europe), Latin American, Islamic, African, Orthodox, Hindu, Japanese, and Sinic (China, Korea, and Vietnam). He argued that human conflicts and wars were more likely to occur along the "fault lines" where those civilizations met. A large swath of topics still remain and those may be lumped into the general category. General psychologists might look at special populations such as the disabled or pro athletes. They often examine wider topics: the effects of environmental change or international psychology. New or cutting edge topics such as media or public policy might be their focus. Historians of psychology fall into this last category too. All psychologists are interested in describing psychology's past and predicting its future. But, just knowing the subdisciplines is not enough. Another way to look at psychology is through the phenomena it attends to.

Psychology's Phenomena

There is much more involved in understanding 21st century psychology than simply listing and analyzing its many subdisciplines. Somehow, each of those subdisciplines must relate to the core subject matter of psychology itself in a clear and recognizable manner. Some phenomena must exist that are clearly and obviously psychological. Once again, someone else has already taken the time and effort to put together such a list. The National Library of Medicine's list of Psychological Phenomena and Processes identifies 12 high-level phenomena in psychology:

- Mental Competency
- Mental Health
- Mental Processes
- Parapsychology
- Personal Autonomy
- Psycholinguistics
- Psychological Theory
- Applied Psychology
- Psychomotor Performance
- Psychophysiology
- Religion and Psychology
- Resilience

The first two items relate to the phenomena of normal vs. psychopathological behavior and are clearly psychological. The next heading, mental processes, includes a large number of phenomena including awareness, learning, memory, and problem-solving. This heading includes a great number of psychological phenomena, some of which date back to the time when psychology began to intrude on philosophy at the end of the 19th century.

Parapsychology includes claims about near-death experiences, out-of-body experiences, precognition, and UFO sightings. Parapsychology is a set of hotly disputed psychological phenomena and, most likely, no amount of discouragement by scientists will reduce the frequency of parapsychological claims. Hynan (2007) provided methodological guidelines for evaluating such claims and suggested that no one method alone is likely to be suitable. Interestingly, psychologists as prominent as William James, C. J. Jung, and William McDougall spent much time investigating paranormal phenomena.

Personal autonomy relates to living independently of others. Most children eventually live autonomously while some adults lose autonomy through a variety of means (e.g., accidents or dementia). Psycholinguistics includes neurolinguistic programming (like parapsychology, neurolinguistic programming is controversial) and the semantic differential, a method for rating attitudes.

As already noted, theories are very important in science and psychology. There are a large number of theories in psychology. Some theories have seen their day, while others continue to thrive. The success of any theory is measured by the amount of research it generates. This text will examine many psychological theories in psychology. Sternberg and Grigorenko (2001, p. 1075) warned, "The student learns as well how…a host of –isms have come and gone, with each generation of researchers hoping that their –ism will somehow be the last." Theories really are provisional; becoming too attached to one can be counterproductive.

The next item, applied psychology, has already been explored in this chapter. It contains the largest part of the body of psychology. So, by popularity alone, it requires examination. Some phenomena within this topic include lie detection, underachievement, absenteeism, and job satisfaction. People look to psychologists to solve these and many other real world problems.

The next category, psychomotor performance includes motor skills and task performance. Humans exhibit a wide variability in their motor skills. Pro athletes represent one extreme and may be highly rewarded for their motor skills. It's amazing that professional golfers can hit drives well over 300 yards with such little apparent effort, or that Olympic gymnasts can perform their routines nearly flawlessly.

Psychophysiology contains a great many psychological phenomena. They range from consciousness to sensory capacities and sleep, through stress-related job burnout. Psychophysics arose at the border between biology and psychology in the 19th century and continues to be a prominent area for psychological research today.

Another of psychology's early interests was the psychology of religion. Nelson (2006) documented the history of the relationship of science (including psychology) and religion and recommended a return to a broader conception of science so that both psychology and religion can be examined from more similar points of view.

The last item, resilience, refers to how individuals differ in their responses to the same situation or stimulus. One example is mental toughness. Crust (2008) reviewed previous research on that phenomenon and concluded that more research is needed in order to better define it. Specifically, he recommended that mental toughness be examined by a variety of methodological approaches, and that populations other than elite athletes be included more often. Couzin-Frankel (2018, p. 971) following events such as hurricane Katrina wrote, "One psychologist coined the term ordinary magic to describe the mix of features that brews resilience. From our stories, we learned that no clear-cut recipe exists."

Hopefully, this brief examination of psychological phenomena has provided a clearer picture of 21st century psychology. The standard textbook definition of psychology still holds for all of these phenomena, but looking at the phenomena makes the definition clearer. Every one of these phenomena is somehow related to behavior or to mental processes.

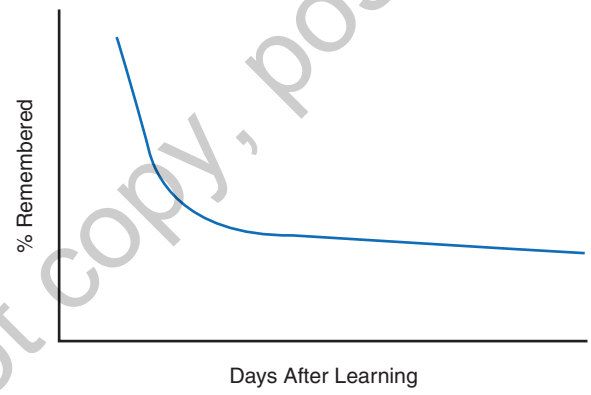
Are There Laws of Psychology?

One of the factors that led Mjøset (2001, p.15) to differentiate social science from physical science was that the latter had succeeded in formulating laws of nature such as the Second Law of Thermodynamics. Such laws are undisputed, universal statements about how nature works. He noted that many early psychologists hoped to formulate similar laws of nature within psychology. Unfortunately, no such laws have yet been discovered nor may they ever be. In some ways,

the physical sciences have far surpassed the social sciences because of the presence and reality of physical laws. The situation is somewhat similar between the biological sciences and the physical sciences. It is impossible to find biological laws either. In the face of these differences between the sciences, some social scientists, notably Merton (1949), simply decided to continue practicing science and forgo any hope of discovering universal laws. In psychology, a similar story exists. It is impossible to find results that apply in all situations. Instead, results must be carefully couched within disciplinary, subdisciplinary, or finer-grained contexts. There are no universal laws of psychology.

All is not lost, however. Some psychological results have stood the test of time and have been replicated again and again. While the examples to follow fail to reach the criterion of a scientific law, they serve to illustrate real and reliable psychological data. The first example is Ebbinghaus's research on human memory. His 1885 book, *Über das Gedächnis* (*Concerning Memory*), caused a sensation when first published. He was the first to show the relationship between memory and the passage of time. Simply put, people forget much more quickly soon after learning and forget much more slowly thereafter. Figure 1.3 shows the relationship between memory and time. Ebbinghaus's discovery does not rise to the level of a scientific law because other conditions (e.g., practice) can alter the relationship between memory and time. So, the relationship is real and reproducible but it does not apply to all types of memory.

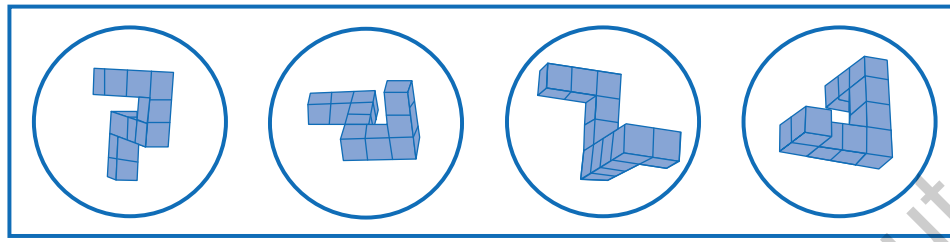
FIGURE 1.3 ■ Ebbinghaus's Graph Showing the Relationship between Memory and Time



Source: Hermann Ebbinghaus, Memory: A Contribution to Experimental Psychology, 1885/1913

A second example is Shepard and Metzler's (1971) mental rotation research. In a laboratory setting, they projected pairs of geometric stimuli to human participants. While the stimuli were projected in two dimensions, they were designed to convey information in all three dimensions. Participants had to decide quickly whether the two stimuli were alike or different. The stimuli which were alike were presented from 0° up to 180° of rotation from each other in any plane. They discovered a remarkably straightforward relationship between the amount of rotation and

FIGURE 1.4 ■ Shepard and Metzler's Stimuli



the time it took to decide. As the rotation approached 180°, participants took longer to decide. Moreover, the relationship was linear. Pigeons, too, have been tested for their abilities to mentally rotate objects. Unlike humans, pigeons are able to make accurate mental rotations from various points of view (Köhler et al., 2005). Humans perform mental rotations best while in a normal upright position. Pigeons, on the other hand, perform mental rotations equally well regardless of their spatial relationship to the stimulus. Flying, apparently, affects how pigeons make mental rotations. Thus, results show that different species make mental rotations but not in the same way. Again, while the results of mental rotation experiments are replicable, they are not universal. The species tested makes a difference (Figure 1.4).

UNIFIED PSYCHOLOGY?

Psychology should be a unified way of thinking about the workings of the mind and the behavior of humans and animals. The reality, however, is more complex. As Staats (1991, p. 899) pointed out, "Psychology has developed the prolific character of modern science, without the ability to articulate its knowledge. The result is a great and increasing diversity—many unrelated methods, findings, problems, theoretical languages, schismatic issues, and philosophical positions." Since he wrote those words, the problems he cited have worsened. Since 1997 and in Staat's honor the American Psychological Foundation and the Society for General Psychology (APA Division 1) have sponsored an invited lecture on unifying psychology at the APA's annual convention.

It is difficult to conceive of 21st century psychology as a unified discipline. Still, that has not stopped some psychologists from proposing solutions for making psychology more unified. For instance, Sternberg (2005) believed it is time for psychologists to halt the fragmentation of psychology. He suggested that psychologists could reverse course by measuring psychological phenomena using multiple methods rather than relying on one preferred method, by concentrating more on studying psychological phenomena from a variety of theoretical viewpoints, and abandoning a reliance on narrow theoretical formulations. Gardner (2005), however, argued that psychology is a young discipline; that it should not be judged against older and more established ones. Furthermore, he pointed out that psychology and other disciplines interact with each other, often absorbing or relinquishing areas of study. Gardner believed that psychology was losing some of its ground to other disciplines. Thus, to him, the unification of psychology is

more than an internal affair. Toomela (2007) echoing Vygotsky argued that unification is more complex than it appears (pp. 452–453):

> Unifying theory should formulate how different subfields of science complement each other, what is common to all subfields and what is specific to every subfield. The question what are the subfields that need to be covered by a general answer is not so simple as it may seem at first glance. The problem is that there different levels of generality of sciences and subfields of science. Overall, three levels of analysis can be distinguished here. Unification is necessary at all these levels of analysis.

His first level is a unifying theory for science itself. Here, psychologists must determine what topics are psychological per se and not part of other sciences (e.g., physics, biology, or sociology). For psychology, the second level should demonstrate what its subfields have in common. In other words, why are they part of psychology? The third level acknowledges that subfields can be more finely differentiated. Toomela (p. 454) cited cognitive psychology as divided into "subfields of memory, thinking, attention, perception, emotions, and motivation." Each of those, too, must be worked into an overall picture of unification.

The chapters that follow will look at that ebb and flow that Gardner described. Psychology's changing borders over time echo his analysis. It is easier to see where psychology's borders have been drawn in the past. But it is another thing altogether to predict where the borders will lay in the future. A broader appeal for unified psychology comes from Duntley and Buss (2008, p. 31). They wrote:

> Evolutionary psychology unites the field of psychology with all the other life sciences, including biology, economics, political science, history, political science (sic), legal scholarship, and medicine; it unites humans with all other species, revealing our place in the grand scheme of the natural world.

Chapter 7 will cover evolution and evaluate its value as a unifying concept in psychology.

Mjøset (2001) did not believe that psychologists will ever discover theories describing laws of nature like those of the physical sciences. Instead, he wrote (p. 15), "few social scientists have discussed the term [theory] in a philosophy of science framework. Even fewer have asked whether the term has the same meaning in all social science." Looking at the history of psychology will reveal many examples of its diversity and will trace the emergence of new subfields. Maintaining a vision of a unified psychology throughout may prove difficult. But, by realizing that psychology really exists as an academic discipline that difficulty can be overcome. The fact that psychology is so diverse and complex should make anyone all the more eager to learn and understand its history.

LEARNING OBJECTIVE

6. Identify at least three topics that are purely psychological and not part of another science.

Last Words Before Departing

It's almost time to begin our trip. We will be going to visit the borders between psychology and four other disciplines: philosophy, biology, the computational sciences, and the social sciences. Along the way, we will take side trips deeper into each of those disciplines in order to better understand psychology. Pack your bags, get your shots, and don't lose your passports!

The next chapter will begin four million years ago and end around 2,500 years ago. During that vast span of time, our species evolved from distant hominin ancestors and lived most of that time as hunter–gatherers possessing only stone-age technology. Starting about 50,000 years ago, humans started to look like people today and to develop newer technologies. By 8,000 years ago, many of our ancestors were living in villages and growing domesticated crops. By 4,000 years ago, people were living in cities, making and trading goods, and having enough time to reflect upon the nature of the world. Some of those first thinkers became the first philosophers.