*C*hapter *17*

Industrial/ Organizational Psychology

Learning Objectives

As you read Chapter 17, keep the following questions in mind and answer them in your own words:
- How has I/O psychology evolved from the early 1900s to the present day?
- What is human factors psychology?
- Why is personnel psychology important?
- What does organizational psychology encompass?

This is your first day as a car washer at an automobile dealership. Your boss points to a new, and very expensive, white car and tells you to clean and prepare it for delivery to a customer. He asks you to move it from the display lot to the washing facility in the back. You get the keys, unlock the door, get in, fasten your seatbelt, insert the key, and start the car. After shifting into reverse and turning around to check behind you, you begin backing up. Suddenly the car begins to accelerate. You jam on the brakes, but the car does not stop. You push even harder on the brake pedal, but the car goes faster and faster. You crash into another new car parked behind you. As your co-workers rush to help, you're physically okay, but you feel confused and shocked. Two very expensive cars are badly damaged.

How could this have happened? You were sure your foot was on the brake pedal, but the car kept accelerating out of control. Did the brakes malfunction? The transmission? The engine? Could you have made some terrible mistake?

Describing the accident, you assure the manager of the dealership you definitely had your foot on the brake the entire time. However, he insists the car was thoroughly inspected by a service technician just that morning, and the steering, brakes, engine controls, and computer were all functioning perfectly. To make matters worse, when the car was reinspected after the accident, the technician could find no mechanical or computer failure. How to solve this puzzle? Perhaps Sherlock Holmes suggested an answer when he said in *The Sign of the Four,* "When you have eliminated the impossible, whatever remains, however improbable, must be the truth"

(Doyle, 1889).

Assuming that the technician was competent and honest, a mechanical failure was unlikely. Most researchers who study unintended acceleration accidents believe they are the result of driver error, not a mechanical malfunction of the automobile (Vernoy and Tomerlin, 1989). As the car washer, you must have actually had your foot on the gas pedal when you thought it was on the brake. This phenomenon, called "unintended acceleration," is relatively rare, but it has resulted in several lawsuits against automobile manufacturers.
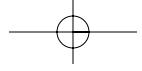
Industrial/Organizational (I/O) Psychology
The study of how individual behavior affects, and is affected by, the physical environment and the organizational culture of the workplace.

*A*nytime a person makes a movement or a decision, there is possibility of error. Most errors such as spilling your milk, hitting the wrong key on your word processor, or betting on the Buffalo Bills, do not result in serious physical injury or property damage. However, if a manager makes a wrong decision in filling a key job or a designer misreads the market for a new line of clothing, a company may lose profits because of lack of productivity or low sales. Similarly, if a worker hits the wrong button at a nuclear power plant, the mistake can damage expensive machinery, seriously damage the environment, and possibly kill or injure thousands of people.

Reducing human error in the workplace involves many factors, including equipment design, selection and training of personnel, design of the work environment, and organizational and decision-making strategies. **Industrial/Organizational (I/O) psychology** studies how individual behavior affects and is affected by the physical environment and the organizational culture of the workplace.

With the possible exception of sleeping, a person spends more time at work than at any other single activity. Thus, finding ways to make our jobs safer and more fulfilling is essential, and perhaps even urgent. You have undoubtedly heard of cases where disgruntled workers attack their bosses or co-workers in a fit of job-related rage. We even have a new term for this behavior, coined as a result of several well publicized cases involving postal workers: "going postal." Reducing the number of workers who "go postal" is one job of the I/O psychologist.

I/O psychologists are frequently employed by business, industry, and the government. Their focus is in three major areas: (1) *human factors psychology* (improving the design and function of machines and the work environment); (2) *personnel psychology* (recruitment, testing, training, placement, and evaluation of workers); and (3) *organizational psychology* (managerial style, worker motivation, and job satisfaction). (See


Industrial/Organizational (I/O) Psychology
The study of how individual behavior affects and is affected by the physical environment and the organizational structure of the workplace.

Human Factors Psychology
The branch of I/O psychology that studies ways to improve the design and function of machines and the work environment to better meet the needs of human users.

Organizational Psychology
The branch of I/O psychology interested in how interpersonal relations in the worksetting affect productivity. Topics of interest include managerial style, worker motivation, and job satisfaction.

Personnel Psychology
The branch of I/O psychology involved with recruitment, selection, training, and evaluation of workers.

Figure 17.1 ***Specialties within industrial/organizational psychology.*** There are three primary areas of interest for I/O psychologists: human factors psychology, personnel psychology, and organizational psychology.

Figure 17.1.) We discuss each of these major areas, but to set the stage we begin with a look at the historical development of I/O psychology.

THE DEVELOPMENT OF I/O PSYCHOLOGY

The formal study of psychology is relatively short, spanning a mere 125 years or so. The study of I/O psychology is even shorter, originating with the work of Walter Dill Scott, Frederick W. Taylor, and Hugo Munsterberg at the beginning of the twentieth century.

How has I/O psychology evolved from the early 1900s to the present day?

The Beginnings: Applying Psychology to Sales and Worker Efficiency

On December 20, 1901, Walter Dill Scott, a psychology professor at Northwestern University, addressed a group of advertising professionals. In his talk, he proposed an interesting idea: Using psychological principles in the field of advertising. Instead of merely exhibiting a product and hoping that customers would realize their need for it, he thought advertisers could aggressively influence customers by *suggesting* they buy it or by *arguing* and *debating* the undeniable merits of the purchase. In other words, use persuasion and argumentation to *sell.*

Scott also proposed several other ideas, radical at the time, but taken for granted today. He suggested imitating other companies' successful products, advertising, and production policies; encouraging competition among companies producing similar goods; building loyalty between producers and suppliers; and creating specialized products for markets (Muchinsky, 1993).
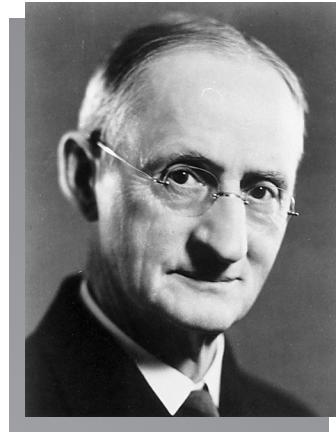
Other Major Figures

Frederick W. Taylor, the next major figure in I/O psychology, emphasized the value of designing the work situation to increase worker output. He correctly surmised that if workers performed their jobs more efficiently, the company would increase profits and workers' wages would go up. In his book *The Principles of Scientific Management* (1911), Taylor formulated four principles for increasing the efficiency and profitability of any organization: (1) scientifically design work methods for greater efficiency; (2) select the best workers and train them in new methods; (3) develop a cooperative spirit between managers and workers; and (4) encourage cooperation between workers and management to improve the work environment.

A particular story is often told about Taylor's attempt to increase the efficiency of workers who shoveled heavy pig iron. Each man moved an average of 12.5 tons of pig iron per day, which to most of us, sounds like a lot. But by allowing the men to rest at scientifically determined periods, and designing new shovels to better match the material being moved, Taylor increased each man's output to 47 *tons* per day! This incredible increase in efficiency resulted in less fatigue and increased wages for the worker, and increased profit for the company (Muchinsky, 1993). Taylor was not a psychologist, but he is nevertheless considered one of the founders of human factors psychology.
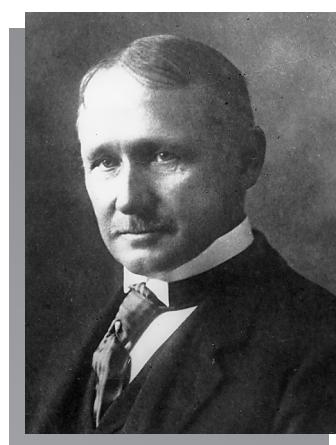
Like Scott, Hugo Munsterberg was an early psychologist interested in applying psychology to the workplace. His book *Psychology and Industrial Efficiency* (1913) covered three topics: (1) selecting workers, (2) designing work situations, and (3) using psychology in sales. Munsterberg was most influential in the area of personnel selection and training, and his best known research was a study of streetcar operators, where he created laboratory simulation of an actual streetcar. This research allowed Munsterberg to develop personnel selection criteria and training procedures that eventually led to better street car operators (Muchinsky, 1993).

Although Scott, Taylor, and Munsterberg all demonstrated the importance of applying psychology in the workplace, for many people in industry it took World

Walter Dill Scott

Frederick W. Taylor
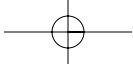
Hugo Munsterberg

War I to give I/O psychology real respectability. At the beginning of the war, the American Psychological Association, led by President Robert Yerkes, approached Army officials and proposed that psychological testing be used to evaluate the mental ability of recruits. The results could then help establish criteria for assigning recruits to appropriate military jobs.

The Army agreed and Yerkes and a group of psychologists were assigned to develop the first group intelligence test, the *Army Alpha*. Finding that approximately 30 percent of the World War I recruits were functionally illiterate, they later developed the first nonverbal intelligence test, the *Army Beta*.

Walter Dill Scott, mentioned earlier for his advertising ideas, also contributed to the effort to classify and place soldiers in jobs according to their abilities. He is credited with developing job descriptions for over 500 military jobs. Although plans for complete testing of all recruits were never fully implemented, World War I saw a significant expansion of I/O psychology.

The Hawthorne Effect

During the period between World War I and World War II, I/O psychology continued to grow. Many companies added human resource departments for the first time, and a number of colleges and universities began to offer training in I/O psychology (Miner, 1992). Considerable research also was being conducted on advertising, personnel selection, and worker training, but the focus of most I/O research during this period was on testing. Rather than individual testing in the laboratory or in the military, however, workers were now tested in the workplace. In 1924, the most extensive—and by far the most famous—of these workplace projects was begun at the Hawthorne Works of the Western Electric Company, just outside Chicago.

In the original study, researchers from Harvard University installed lights of varying brightness levels in different workrooms where electrical equipment was assembled. The light in some rooms was intense, while as subdued as moonlight in others. The object was to study the relationship between worker efficiency and lighting. The results were quite surprising.

Psychologists, led by Robert Yerkes, developed the Army Alpha, *the first group IQ test. The* Army Alpha, *and later the* Army Beta, *were used to test and classify World War I recruits.*

The Western Electric Hawthorne Works was the site of a famous study of workplace behavior conducted between World War I and World War II.

Researchers found that worker productivity had little or nothing to do with the lighting level. Productivity improved under both *increased* and *decreased* brightness! Even more surprising, when the brightness level remained *unchanged*, productivity still increased. Simply knowing they were being used as research participants apparently improved worker performance. This is known as the **Hawthorne effect,** when people change their behavior because of the novelty of the research situation or because they know they are being observed.

You may have observed the Hawthorne effect in everyday life. When you walk down the sidewalk singing and suddenly notice other people looking at you, you probably stop singing. Similarly, students taking a test are less likely to cheat if they know the professor is watching them, and people are more likely to wash their hands after using a public restroom when others are watching. Little Leaguers also pay more attention to the game when the coach yells their name. In each of these cases, behavior is changed as a result of being observed.

Because of the remarkable findings from the lighting tests, the Hawthorne project was expanded to investigate many other topics, including pre-employment testing, interviewing techniques, and personnel counseling. Various studies continued for over 10 years, ending just as World War II was beginning. The major contribution of the Hawthorne studies was to document the fact that a worker's behavior was influenced not only by the physical setting, but also by social factors in the workplace. That is, the workplace is a social system as well as a system for producing goods and services.

Hawthorne Effect
The phenomenon that occurs when people change their behavior because of the novelty of the research situation or because they know they are being observed.

Try This Yourself

You can easily do a mini study on the Hawthorne effect. Choose a good friend—let's say your friend is a male—and (without his knowledge) observe him studying or watching television for about five minutes. Write down in detail what he is doing. Document how many times he looks up from his book, changes channels on the television, and so on.

At the end of five minutes, tell him you need to observe his behavior for five minutes as part of a psychology assignment. Now record the same behaviors. Does his behavior change? Does he look up from his studies more often? Less often? Does he do more or less "channel surfing" while watching television? If his behavior changes, you will have observed the *Hawthorne effect.* ■

Modern Times: Expanding the Role of I/O Psychology

By the beginning of World War II, I/O psychology had begun to mature. Many companies now had personnel offices that routinely tested and placed employees. They also implemented scientifically designed worker-training programs to improve productivity. Researchers were beginning to conduct studies in human factors psychology, as machines in the workplace became more complicated.

Many of these advances were applied to the war effort. The first contribution from I/O psychology was the development of the *Army General Classification Test* (AGCT). The AGCT made it possible to classify new recruits into a few broad categories based on their ability to learn the duties and responsibilities of a soldier. Psychologists also helped develop situational stress tests to select and train candidates for military intelligence units (spies). In addition, they developed tests for selecting aircraft pilots and training them more rapidly and safely.

Human factors psychology also contributed greatly to the operational safety of airplanes by designing better control panels. For example, at the beginning of the war many planes and pilots were lost because, when preparing for landing, pilots tended to mistake the landing gear control for the wing flap control. Consequently, pilots tried to land planes with the wheels up or with the wing flaps in the wrong position, providing insufficient lift.

The human factors solution to this problem was simple: design the controls to correspond to their function. Consequently, they redesigned the landing gear controls to look and feel like wheels, and they redesigned the wing flap controls to look and feel like a wing. The result: greatly reduced landing errors! These World War II airplane design changes are still used on contemporary aircraft.

Early I/O psychology was, in effect, industrial psychology, focusing on worker efficiency and productivity. During World War II, however, personnel psychology had emerged as a major subspecialty, and many researchers began to shift their attention from the manufacturing floor to the executive management offices. They thereby created organizational psychology and put the "O" in I/O psychology. Organizational psychologists studied companies with the goal of improving administration and productivity.

The civil rights movement of the late 1950s and early 1960s culminated in the Civil Rights Act of 1964. Among other things, it mandated the creation of employment tests, training programs, and recruitment programs that were fair to all job applicants regardless of ethnicity, religion, or gender. Tests given to screen job appli-

This photograph of a World War II bomber cockpit shows how human factors psychologists made flying safer and easier. Notice how the controls for the landing gear are designed to look and feel like the function they perform. The landing gear controls are round like a wheel (as shown in box).

cants had to be valid predictors of job performance. For example, general IQ tests could no longer be used to screen applicants at the Telephone Company for the job of directory assistance operator; instead, the Telephone Company might administer a spelling and reading comprehension test.

The Civil Rights Act of 1964 also forced a radical change in corporate recruitment and hiring policies that resulted in opening many previously unobtainable jobs to ethnic minority and women job applicants. Hence, I/O psychology was now responsible not only to corporate management, but to the federal government as well.

In the next section we will introduce you to human factors psychology in which I/O psychologists study how to make humans and machines work together.

✔ CHECK AND REVIEW

Development of I/O Psychology

Industrial/organizational (I/O) psychology is the study of how individual behavior affects and is affected by the physical environment and the organizational structure of the workplace. Major founding figures were Walter Dill Scott, Fredrick W. Taylor, and Hugo Munsterberg.

The personnel needs of World War I gave the I/O field respectability. Based on newly developed group IQ tests, Walter Dill Scott developed a program to place recruits in jobs that suited their abilities.

Among important I/O research findings during this period was a phenomenon termed the Hawthorne effect, when people change their behavior because of the novelty of a research situation or because they know that they are being observed.

World War II led to scientifically designed worker training programs to improve productivity for the war effort. After the war, many I/O psychologists turned their attention from the manufacturing floor to the executive management offices, thereby creating organizational psychology.

The Civil Rights Act of 1964 required I/O psychology to create employment tests, training programs, and recruitment programs that were fair to all job applicants regardless of ethnicity, religion, age, or gender.

QUESTIONS

1. Match the founders of I/O psychology (Scott, Taylor, Munsterberg) with their major contribution:
   (a) Pioneered methods leading to improved personnel selection and training.
   (b) Developed principles companies could use to increase worker efficiency and company profit.
   (c) First to apply psychological principles to advertising

2. Hui-Ching is a consultant who is hired by a large law firm to study worker motivation and job satisfaction. Hui-Ching is part of which branch of I/O psychology? (a) consulting; (b) organizational; (c) personnel; (d) human factors.

3. The _____ occurs when a research participant changes his or her behaviors because they know they are being observed. (a) halo effect; (b) observational bias; (c) Hawthorne effect; (d) spectator bias.

4. How did the Civil Rights Act of 1964 influence I/O psychology?

Answers to Questions can be found in Appendix B.
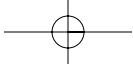
HUMAN FACTORS PSYCHOLOGY

How has I/O psychology evolved from the early 1900s to the present day?

Human Factors Psychology
The branch of I/O psychology that studies ways to improve the design and function of machines and the work environment to better meet the needs of human users.

Human–Machine System
An arrangement of people and machines, tools, and other devices that produce a product or service.

Displays
Devices such as gauges and video monitors that form the machine output in the human—machine system.

Controls
Devices such as wheels, levers, and knobs that are the input for the machine in the human–machine system.

An automatic teller machine (ATM) is obviously more complicated than a videocassette recorder (VCR). However, most people find it much easier to get $20 out of their local ATM than to program their VCR to record "Ally McBeal" on Monday night. Why is the more complicated machine easier to use? At least part of the answer is in human factors.

Human factors psychology is the branch of I/O psychology that studies ways to improve the design and function of machines and the work environment to better meet the needs of human users. Thousands of hours of human factors research went into making your ATM easy to use. To get your money, all you need is a plastic card, a personal identification number, and the ability to read a few simple commands. To program your VCR, however, you must read a 20-page booklet. In this case, human factors research has been largely ignored.

The Human–Machine System: How to Get People and Machines to Mix

The problem with machines is that ordinary people run them. It is not difficult for an engineer to design a machine that functions efficiently by itself or when operated by an engineer. The difficulty arises when someone other than an engineer and the machine must work together as one unit to become a *human–machine system* (Oborne, 1995). A **human–machine system** is an arrangement of people and machines, tools, and other devices that produce a product or service. The basic components of the human–machine system are illustrated in Figure 17.2.

As Figure 17.2 shows, the machine side of the system consists of **displays** (the machine output) and **controls** (the machine input). The human side of the system consists of sensory functions (the human input), cognitive functions, and motor functions (the human output). The machine's displays provide the sensory input for the human, and the human's motor responses provide the control input for the machine.

Why is it so much easier to use an ATM machine than to program your VCR? The answer comes from human factors research.
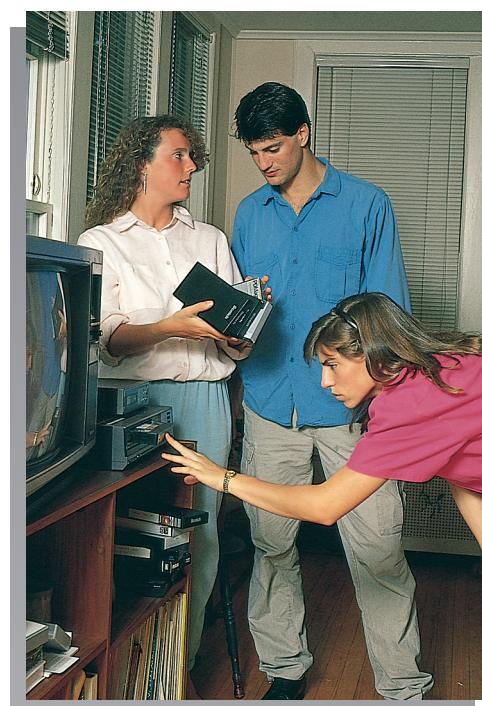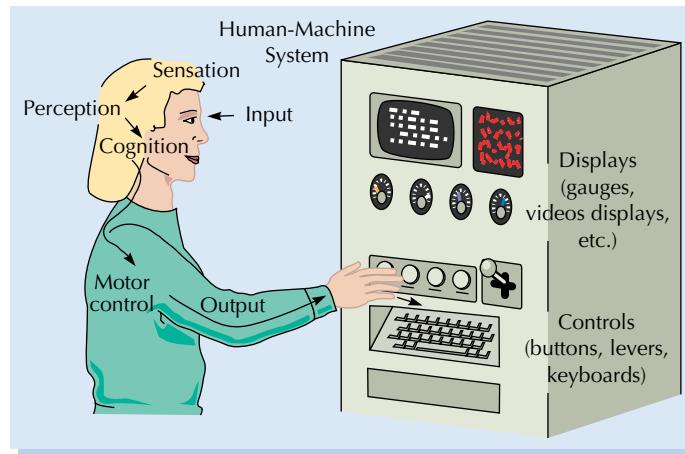
Figure 17.2 **The human–machine system.** In a human–machine system, a human and machine work as a unit to produce a product or service. The machine displays, such as gauges and video monitors, output information about the status of the machine to the sensory receptors of the human, which serve as the input for the human part of the system. Sensory information from the eyes or other sensory organs is processed by the brain of the human, and adjustments to the machine are communicated to the machine controls via the human's muscles and voice commands.

It is an interdependent system, where neither the human nor the machine can produce the product or service without the other.

Once the machine is running, the human needs the display data from the machine to determine whether corrections need to be made, and the machine needs the human to input the necessary corrections via the controls. In this way, machines can do the tedious precision tasks that are difficult for humans, and humans can do the cognitive tasks involving judgments and corrections that are impossible for the machine to do.

A driver and automobile are a good example of a human–machine system. The driver has the cognitive ability to guide the car to its intended destination, and the automobile has the power to move the driver at relatively great speeds over large distances. When you are driving, you and the car act as one unit, a human–machine system. You use your sensory systems to collect and monitor information about the operation of the machine. You read the speedometer, the tachometer, and other gauges; you listen and feel for (hopefully!) normal functioning of the engine, body, and tires; and you even use your sense of smell if a strange odor suggests a problem. Using this varied input, you adjust the machine by pressing harder on the accelerator, adding oil, or stopping to change a flat tire. Once in a while, the human–machine system fails to perform properly—the car runs out of gas, or you step on the accelerator instead of the brake pedal.

Human factors psychologists help design the controls and displays in automobiles.
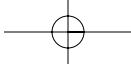
Designers can make the human–machine system more reliable in two ways: They can better train the people using it, or they can modify the machine. Because modifying the machine is easier than modifying people (it is much easier to make a display larger than to make a person's vision more acute), human factors psychology generally focuses on improving the design of the controls and displays on machines. Improving the design of a machine translates to matching its displays and controls to human sensory and motor skills.

Displays: How the Machine Talks to You

Displays providing data about the machine's operation form the input for the human side of the human–machine system. Or, to put it simply, the machine talks to you through its displays; video monitors, gauges, bells, and blinking lights. A good display design must recognize how people sense and perceive their world, as well as how people think. Therefore, a human factors psychologist must have a thorough knowledge of human sensation, perception, and cognition.

Failure to understand the limits of human sensory capabilities can have disastrous results (Aberg and Rimmoe, 1998; Shappell and Wiegmann, 1997). If the beeping sound accompanying the lowering of a heavy motor cannot be heard above background noise, a dangerous accident might occur on the automotive assembly line. If a gauge has lettering that is too small to read, a machine could overheat, requiring costly repairs. If a warning light does not get the machine operator's attention, the nuclear reactor core could be damaged.

Suppose you are hired to monitor several machines in a factory. Your supervisor explains that the machines' display panel was designed so that an uninterrupted line of green lights indicates normal operation. If any component malfunctions, its corresponding light on the display panel turns red. When you notice a red light, you are told to refer to the manual and make the indicated adjustments to bring the machine back into proper working order.

But, you tell the supervisor, you are red/green color defective and cannot tell the difference between red and green lights. She smiles and tells you not to worry: Human factors psychologists helped design these machines. Because they were aware of color deficiencies, they made sure that the red warning lights would blink instead of remaining lit like the green lights, so that any sighted person would be sure to detect a malfunction. (Of course, the blink rate of the light must not be too slow or too fast. But that is a different perceptual/human factors problem.)

Control panels of large complicated machines, such as this automated can maker, use color-coded lights, dials, gauges, and displays to lessen the chance for human error.
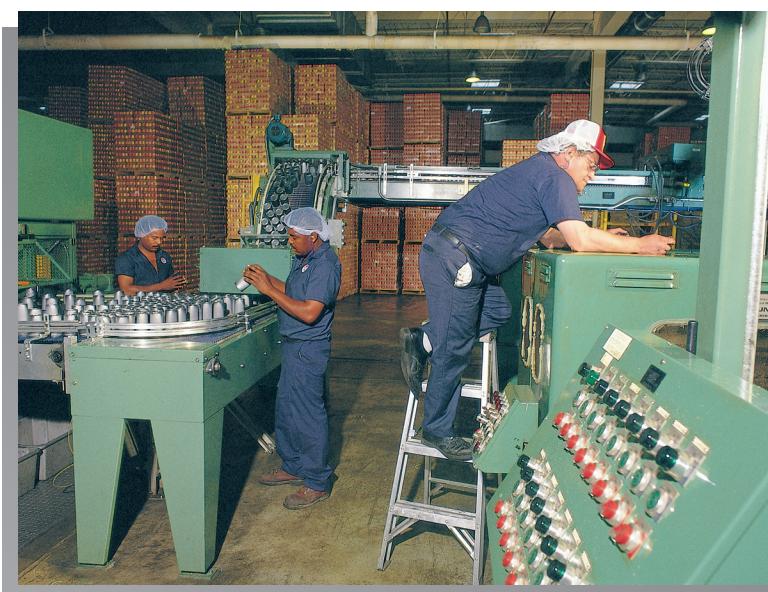
In addition to knowing about human sensory abilities, human factors psychologists also need to be aware of the cognitive abilities and limits of the people who will be part of the human–machine system (Reinach et al., 1997; Sterns and Camp, 1998). Suppose you want to design a display that indicates speed of a car to the driver. You have the three options displayed in Figure 17.3. The first option, Figure 17.3a, is a typical circular speedometer scaled in one-mile-per-hour increments. The second option, a digital speedometer, also gives the reading in one-mile per hour increments (see Figure 17.3b). The third option, Figure 17.3c, is a continually changing bar graph that shows changes in increments of one mile per hour. Which one of these speedometers can be most quickly and accurately read by a typical driver? If you picked Figure 17.3b, you were right. People can read the exact speed more quickly and more accurately off a digital display than any other type.

But is speed the only information a speedometer is designed to display to a driver? The answer is no. Speedometers also give information about acceleration, the rate of change in speed. If you had to pick the speedometer that best indicates acceleration, you should choose the circular speedometer, Figure 17.3a because it takes very little cognitive processing to determine the direction of the needle's movement. Each of these types of speedometers has been tested in actual automobiles, but as human factors psychologists have found, the circular display is still the best design for relaying both speed and acceleration of the automobile.

Controls: How You Talk to the Machine

When someone decides to change a machine's functioning, they must input instructions via the machine controls. These controls can be as simple as a dial, a wheel, or a switch, or as complicated as a keyboard. The design of any control device must reflect the capabilities of both machine and human. If the machine demands input beyond the cognitive or motor abilities of the human, the system will fail or function at a suboptimal level. Human factors psychologists study variables like workers' strength, endurance, speed, and accuracy of movement.

Let's explore the topic of accuracy of movement. When you reach for a can of soda, you usually pick it up with no trouble. But once in a while, you bump and spill it. This is an example of a motor control error, an error everyone makes at one time or another—even Kobe Bryant misses a slam-dunk once in a while. Missing a shot in basketball is not life threatening, however. Hitting the wrong pedal in your car, could be.

As mentioned in the opening section, the most probable cause of unintended acceleration accidents was driver error. The driver, thinking he or she is stepping on the brake pedal, actually slams on the accelerator. Mark Vernoy and George Tomerlin (1989, 1990) investigated pedal errors in various types of cars using hundreds of licensed drivers as participants. They asked drivers to sit in cars, shift the transmission into park, reverse, or drive, step on the gas pedal, and step on the brake pedal. At an unexpected point in the experiment, participants were commanded to: "Stop! Step on the brake!"

The movement and placement of the participant's feet during this surprise braking were videotaped and later analyzed for errors. On several trials, participants failed to hit the brake, and hit the accelerator pedal instead. Thus, Vernoy and Tomerlin documented the role of human error in these instances of unintended acceleration. Because it is impossible to train a driver to be totally free from this type of pedal error, carmakers could modify the automobile controls to either reduce or eliminate this error.

Why not try to place the pedals as far apart as possible in order to minimize confusion between the brake and the gas? This is a possible solution, except increasing the distance between the pedals also increases the time needed to move the foot from the gas pedal to the brake. At 60 miles per hour, a delay of one-tenth of a second causes the car to travel an additional 8.8 feet before the brake is applied. Pedals that are farther apart might decrease pedal errors, but the overall number and severity of accidents might increase because the cars would take longer to stop.
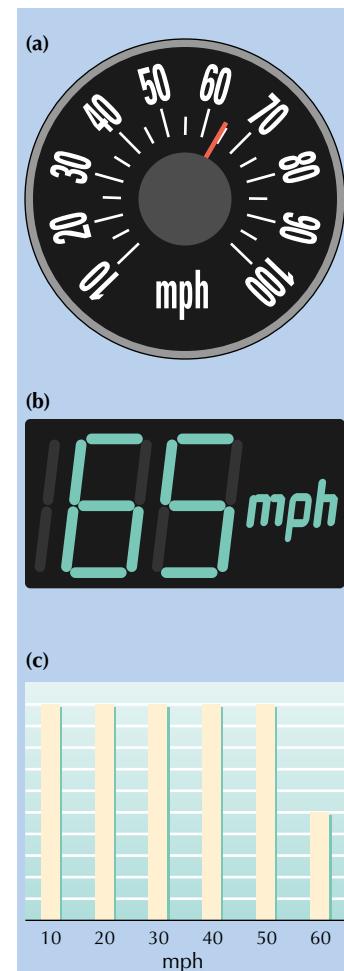

Figure 17.3 *Three different types of automobile speedometers.* Which of these would be the easiest to read if you wanted to know only the speed of the automobile? Which of these would be the best if you wanted to know both the speed and acceleration of the automobile?

(a) Spatial Correspondence   **(b)** Visibility   **(c)** Shape Indicates Function

Poorly designed   Well-designed   Poorly designed   Well-designed   Landing gear   Landing flap
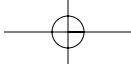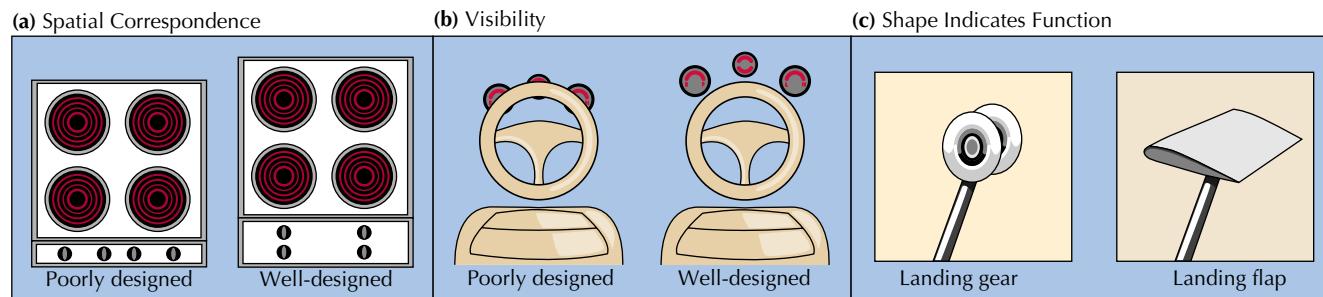
Figure 17.4 *Human factors design and the real world.* Well-designed appliances and machinery are easily understood and operated. (a) The controls for stovetops should be arranged in a pattern that corresponds to the placement of the burners. (b) In an automobile, gauges for fuel, oil, and speed should be easily visible to the driver. (c) Controls and knobs are easier and safer to use if their shape corresponds to their function.

What is the solution? Nearly all cases of severe unintended acceleration happen when people are *backing up* in a new or relatively unfamiliar car. If drivers first had to brake to unlock the transmission before they could shift into reverse, they would be less likely to mistake the brake pedal for the accelerator (Vernoy and Tomerlin, 1989). Such a simple correction would also have prevented the accident described in our chapter opener.

Figure 17.4 offers additional examples showing how a well-designed human–machine system can accomplish its task quickly, accurately, and safely.

✔ **CHECK AND REVIEW**

Human Factors Psychology

Human factors psychology is a branch of I/O psychology that studies ways to improve the design and function of machines and the work environment to better meet the needs of human users.

Researchers consider humans and the machines they use a human–machine system, an arrangement of people and machines, tools, and other devices that produce a product or service. The human side of the system consists of sensory functions (input) and cognitive and motor functions (output); the machine side consists of displays (output) and controls (input)

QUESTIONS

1. The improvement of the design and function of machines and the work environment to meet the needs of human users is studied by _____ psychology. (a) personnel; (b) human factors; (c) organizational; (d) technology.
2. When the human's motor responses provide the control input, while the machine's displays provide the sensory input, this is an example of _____.
3. What is the difference between a display and a control?
4. The keys of the first manual typewriters were not arranged alphabetically, but in a pattern that prevented fast typists from jamming the keys. This is an example of a good _____. (a) human-machine system; (b) operator/machine team; (c) man versus machine problem; (d) human factors analysis.

Answers to Questions can be found in Appendix B.

PERSONNEL PSYCHOLOGY

At the beginning of this chapter, we said that with the possible exception of sleeping, a person spends more time at work than at any other single activity. Think about that again: In your lifetime, you will spend at least twice as much time at work as you will with your friends and family. In other words, the quality of your life is directly related to the satisfaction you receive from your work. The importance of your career choice cannot be overestimated. And just as you need a job that maximizes your skills and satisfaction, business and industry need employees who have the skills and motivation to maximize productivity.

Personnel psychology plays an important role in locating the "right person for the right job" (Smith and Sutherland, 1996). In addition to (1) recruitment and selection, personnel psychologists also become involved in (2) employee training, and (3) developing objective criteria for evaluating employee performance. In this section, we will discuss each of these three elements. We will also explore the special problem of sexual harassment.

Recruitment and Selection: Finding the Right Person for the Right Job

Personnel recruitment and selection begins with **job analysis,** a detailed description of the skills, knowledge, and activities required by a particular job (Borman et al., 1997). Let's apply this definition to something that may be of interest to you as a student—the work of college instructors. They are primarily responsible for education and research, while administration (president, deans, etc.) and support staff (office personnel, custodians, directors) assume responsibility for running the college (funding, buildings, and maintenance).

While the knowledge, skills, and abilities necessary to perform as a successful college instructor vary according to academic discipline (psychology, math, physical education, etc.), all instructors share similar tasks: Teaching assigned classes, maintaining required office hours, preparing and grading exams and papers, attending department meetings, and serving on college committees. In addition, many colleges and universities expect professors to conduct research and to publish in professional journals.

If a college wanted to hire a new college instructor, they would begin with a job analysis like this, followed by the selection of a large, field of candidates. The next step—for any job—is to choose the one most qualified candidate. The number of candidates may be narrowed through applications, questionnaires, interviews, observations, standardized psychological tests, knowledge and skills tests, performance tests, and *biodata* (detailed biographical information).

Of all the selection devices, the interview continues to be the most popular—and to carry the most weight (Dipboye, 1992). Interviews can be *structured* or *unstructured.* Structured interviews involve a set of preplanned questions that are asked of every person who is interviewed and a standardized rating of the applicant's qualifications. This reduces several biases associated with unstructured interviews, which tend to be casual, short, and made up of random questions. As expected, structured interviews are much better predictors than unstructured interviews (Campion et al., 1999; Clarke et al., 1998; Rogers et al., 1997).

A personal interview involves questioning job applicants to learn their qualifications and to get an impression of their personalities (Borman et al., 1997). If you perform poorly at this stage, you are not likely to be hired, regardless of your experience, test scores, or letters of recommendation. Therefore, let's spend some time talking about interviewing.

If you are asked to come in for an interview, you can expect a face-to-face meeting with one or more interviewers. They may be using the interview as an alternative or adjunct to the application form. Questions are designed to measure your attitudes

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Why is personnel psychology important?

Personnel Psychology
The branch of I/O psychology involved with recruiting, selecting, training, and evaluating workers.

Job Analysis
A detailed description of the skills, knowledge, and activities required by a particular job.
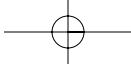
Table 17.1	**WHY MOST PEOPLE HATE BEING INTERVIEWED**
Problems	
"First date" syndrome	In initial meetings with important, but unstated, outcomes both parties behave with artificial care and skill.
Nervousness	Applicants know they are being evaluated and compared to others, and they are typically in a "one-down" position (they need what the employer has to give). Thus, most interviewees are tense and anxious.
Subjectivity	When one person meets another, impressions tend to be formed immediately—sometimes due to nothing more than clothes or facial appearance. These first impressions are often resistant to change.

Source: Auerbach, 1996.

("Did you like your last job?" "Do you prefer working in groups or alone?"), job experiences ("What did you do in your last job?"), and personal background ("What was your college major?"). Interviewers also use this face-to-face meeting to assess your communication and interpersonal skills. Successful applicants are typically friendly (but not overly so), eager (but not desperate), and assertive (but not aggressive).

Is interviewing really that complicated? I'm getting nervous just reading about this. Most interviewees tend to be anxious, and that is perfectly normal (Table 17.1). But there are also reasons to look forward to interviews. First, interviews allow for longer and more detailed answers than application forms, and most people find it easier to talk than to write. In addition, both parties have the opportunity to ask questions and to clarify exactly what the job requires. In effect, you are interviewing the company as much as it is interviewing you.

Try This Yourself

If you would like to improve your interviewing skills, try the following:

1. *Research*   Before your interview, research the company, employer, supervisors, and all available positions. The information you gather can be invaluable in helping you respond to interview questions. Also, simply knowing the history and size of the company will show the interviewer that you are serious about your job search. Research can also help you decide if you really want to work for this company.

2. *Role playing*   Ask someone to help you practice playing both interviewer and interviewee. Encourage honest feedback about verbal and nonverbal habits that may affect your interview. For example, do you nervously jiggle your feet or avoid eye contact? Also, brainstorm ahead of time about potential questions and good responses.

3. *Personality*   Interviewers generally like friendly, eager, and assertive applicants. These are basic personality traits you've undoubtedly used before, when meeting new friends or on a first date, for example. Recognizing you've used these skills in the past, may help you relax in the interview and "be yourself."

   (On the other side, if you become an interviewer, you can make the interview process more comfortable—and therefore more productive—in several ways. Most important, recognize that the applicant is tense. Begin by introducing yourself. Be relaxed and friendly, and briefly describe what the interview will be like. Tell how long it will take and what topics will be discussed. Finally, encourage the interviewee to ask questions.)
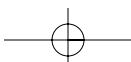
Employee Training: Objectives and Methods

After applicants are tested and interviewed and the best candidate is hired, the personnel psychologist helps train the new employee. Research shows training not only provides workers with appropriate skills for the assigned job, it also reduces frustration and stress (Aamodt, 1999; Saal and Knight, 1988).

Training typically begins with some form of *orientation*. Just as you may have had a college orientation designed to introduce the educational organization, new employees are usually given either a formal or informal introduction to the business setting. Pay close attention. The orientation is designed to "clue in" new employees. You are being taught the facts of organizational structure and operations as well as appropriate attitudes and allegiances.

Every organization has its shared pattern of thought and action, an **organizational culture.** This culture arises from each group's history and involves group identity, policies, and rituals. For example, organizations typically develop characteristic attitudes toward diversity, creativity, attention to detail, team versus individual orientation, and stability versus innovation (Hurley and Hult, 1998; Miller, 1998; Tesluk et al., 1997; Wilpert, 1995). Fitting into an organization means fitting into its culture.

Organizational Culture
A group's shared pattern of thought and action; a common perception held by the organization's members.

Personnel psychologists are also involved with training and upgrading skills for new and existing employees. Skill training can be technical and highly job specific. You might be taught how to sell or service the company's product, or how to operate the communication system and other machines. General training may also be offered for interpersonal skills, including effective listening, communication, and how to be a "team player."

One of the fastest growing areas of interpersonal skill development is diversity training, learning to work with individuals from various cultural backgrounds (Aamodt, 1999; Haggerty, 1993). Even the smallest of U.S. businesses may now compete globally and employees and managers need to adjust their style to conduct business all over the world.

Gender and Cultural Diversity

### WHAT HAPPENS TO BUSINESS WHEN CULTURES CLASH?

As a tourist, have you ever unintentionally violated the cultural rules in a foreign country and been horribly embarrassed? As an international businessperson, you risk more than embarrassment: You might lose important business contacts, or even find yourself in serious legal trouble. Given our multicultural society and our expanding interactions with other nations, it is important to understand and appreciate diversity, and help prevent *culture clashes*. Consider this story from Richard Brislin (1993):

> Kiyoshi, a Japanese executive, was visiting an automobile plant in the American Midwest to explore a possible joint venture in manufacturing a new model of car. Hank, an executive at the plant, invited Kiyoshi and his wife to dinner at his house. They arrived at the agreed upon time of 6:00 P.M. and the group enjoyed pleasant conversation over soft drinks ("No one drinks hard liquor any more!" Hank thought). Dinner was served at 7:00 P.M. and dessert at about 8:15 P.M. After finishing their dessert, Kiyoshi and his wife quickly thanked Hank and then quickly left. Hank thought something was wrong, either with himself or with Kiyoshi's manners. What went wrong? Why did Kiyoshi and his wife leave so quickly? (p. 98)

You may be surprised to see how differing cultural expectations help explain this awkward and confusing *culture clash*. The norms in Hank's culture require guests to engage in pleasant conversation after dessert, and if people leave early it is consid-
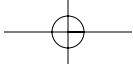
Table 17.2	**DOING BUSINESS IN CANADA**

Canadian V-for-Victory gesture
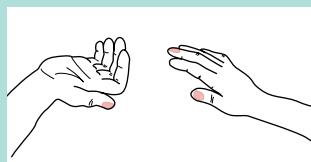
Canadian beckoning and waving gestures

Appointments
French-speaking areas of Canada may be more casual about time, but, as a foreigner, it is always good manners to be prompt. While business lunches are popular in Canada, dinners have traditionally been social occasions—if business is discussed at all, it is at the end of the meal. This is changing, but to be safe, allow your Canadian counterpart to bring up business first.

Negotiating
Although styles are similar, many Canadians think U.S. business people "hype" their products. Never inflate your product's benefits. English and French are the official languages, but in Quebec there are very stringent rules—French is the only legal language in which to conduct business.

Gestures
To beckon someone wave all the fingers in a scooping motion with the palm facing up. To wave good-bye, move your entire hand, facing outward. The "V-for-victory" sign is done with the palm facing out—it may be taken as an insult when done with the palm inward.

Gifts
Business gifts should be modest—Canadians tend to frown on ostentation. When visiting a home, it is customary to take flowers, candy, or liquor.
French–Canadian homes may be divided into "public" rooms that visitors may enter and "private" rooms where visitors may enter only when asked. The kitchen is often a private room—do not enter unless asked.

Source: Adapted from *Kiss, Bow, or Shake Hands* by T. Morrison, W. A. Conaway, and G. A. Borden, 1994. Adams Media Corp.

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ered an insult. However, in Kiyoshi and his wife's culture, remaining after dinner is a sign that you are still hungry, and the host would be expected to offer more food! If you think differences exist mainly between Eastern and Western cultures, see Table 17.2, which outlines small, subtle differences between very similar nations, the United States and Canada.

While some clashes between cultures are inevitable, there are ways to minimize misunderstandings (adapted from Brislin, 1993, Dresser, 1996):

1. *Examine your thought processes* Because norms are generally covert and unexamined, it is easy to mistakenly assume that our rules for conducting business or social interactions are the same as others'. One way to prevent misunderstandings like Hank and Kiyoshi's, is to become aware of your own cultural rules, and then learn the norms of your business client's country.

2. *Adjust your behaviors to match the other culture* If you are doing business in Quebec, for example, use French in your transactions or ask for a French-speaking assistant to translate for you. At the least, apologize for not knowing the official language. Adjusting your behavior demonstrates that you recognize diversity and respect the other person's culture. Even within the United States, it can be helpful to adjust your behavior. For example, many Native Americans prefer more silence in their communications than Anglo Americans, who usually interpret silence as a sign that interactions are not going well. An Anglo American who understands this cultural difference will refrain from rushing to fill any silence when doing business with a Native American.

3. *Recognize that culture clashes are emotionally stressful* When people interact with unfamiliar people in unfamiliar circumstances, stress is inevitable. It is frustrating not

to be able to easily communicate with others and to find that familiar ways of behaving do not work in other cultures. For example, in the United States during informal entertaining, dinner guests often gather in the kitchen while the host finishes preparing the food. After dinner, guests often help clear the table and perhaps even put leftovers in the refrigerator. In French-Canadian homes, however, the kitchen is generally considered a "private" room that guests should not enter. Simply recognizing that some culture clashes are inevitable, may help reduce your stress.

CHECK AND REVIEW

Recruiting, Selecting, and Training Employees

Personnel psychology involves recruiting, selecting, training, and evaluating workers. Recruitment begins with a job analysis, which is a detailed description of skills, knowledge, and activities required in a particular job. Interviews are the most popular method of choosing the most qualified candidate. Structured interviews are better predictors of future job performance than unstructured interviews.

Prepare for an interview by doing research on the company, role playing with a friend, and emphasizing desirable personality traits.

Employee training typically begins with an orientation program. One of the major unstated goals of orientation is transmitting the organizational culture—the group's shared pattern of thought and action.

QUESTIONS

1. The branch of I/O psychology involved with recruiting, selecting, training, and evaluating workers is known as _____psychology. (a) human factors; (b) engineering; (c) social; (d) personnel.

2. When choosing a candidate for a job, the _____ is the most popular and most heavily weighted of all selection devices.

3. What are the three basic personality traits that most appeal to interviewers?

4. A group's shared pattern of thought and action is known as _____. (a) the organizational culture; (b) personality/job-fit theory; (c) the Hawthorne effect; (d) the organizational structure.

Answers to Questions can be found in Appendix B.

Evaluating Workers: Measuring Job Performance

After an employee has been in a job for awhile, his or her performance is then evaluated. **Performance evaluation** is the formal procedure an organization uses to assess the multidimensional job performance of employees (Arvey and Murphy, 1998). Organizations use performance evaluations for a number of purposes. One of the most important is providing feedback to the employee on how the organization views his or her performance. Employees need to know when they are doing well (so they can keep on doing well), and when they are not (so they can change). Research shows that employees fare better when their work is evaluated, when reinforcers are closely related to job performance, and when criticism is delivered constructively (Baron, 1990; Locke and Latham, 1990).

Performance evaluations are also useful for identifying training and development needs. Does the employee need upgrading of skills or retraining? In addition, management uses performance evaluations for decisions on promotions, transfers, and termination.

Performance Evaluation
The formal procedure used by an organization to assess job performance of employees.
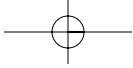
A performance evaluation may be *objective* or *subjective.* Objective measures include such things as the number of sales for a salesperson or the number of publications for a college instructor. Many jobs (like management and support services), however, do not have an easily identifiable and objective product, and in some cases objective measures may not be appropriate. For example, how do you identify the *product* of a college instructor? The effect of one college instructor on any one student is difficult to measure objectively. Furthermore, benefits from a college instructor or a college degree are sometimes years away.

Subjective measures avoid some of these problems (but introduce others, as you will shortly see). Subjective ratings by supervisors or others who are familiar with the employee's job performance are the most common form of performance evaluation. Despite their popularity, subjective methods suffer from serious rater biases and other human errors (Arvey and Murphy, 1998). One of the most widely researched problems is the tendency to rate individuals either too high or too low based on one outstanding trait, the **halo effect.** If a person is rated "exceptional" in one area, he or she tends to be rated "exceptional" in all areas. The same thing occurs when someone is rated "poor" in one area.

The halo effect is a significant problem. If a supervisor happens to value friendliness, will he or she overrate an employee who smiles a lot? Also, how can we differentiate between what might be termed a *legitimate* halo—an employee who *does* perform well on all dimensions—and bias caused by the undue influence of one characteristic? Preventing and minimizing the halo effect is a major research topic in personnel psychology (Larose and Standing, 1998; Murphy, Jako, and Anhalt, 1993; Solomonson and Lance, 1997).

To offset problems with the halo effect and other evaluation biases, some organizations have recently turned to "360-degree" performance measures, which include evaluations from supervisors, peers, subordinates, and even customers. These multisource measures are useful for both feedback and personnel decisions (Arvey and Murphy, 1998).

Organizations may also use specially designed rating scales, where the supervisor evaluates an employee in certain critical areas by assigning a numerical rating. As Figure 17.5 shows, your job as student could be evaluated with this type of rating

Halo Effect

The tendency to rate individuals either too high or too low based on one outstanding trait. The halo effect is a characteristic defect in rating scales.

"He's not a perfect boss, but he *does* give you plenty of feedback."

Student Performance

Comments During Lectures

| None | | | | Occasional, basic | | | | Frequent, thoughtful |

Reviewing Course Content

| Cram on way to exam | | Twice | | Monthly | | Weekly | | Daily |

Studying Textbook

| What textbook? | | Chapter by chapter | | Paragraph by paragraph | | Word by word |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
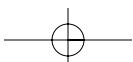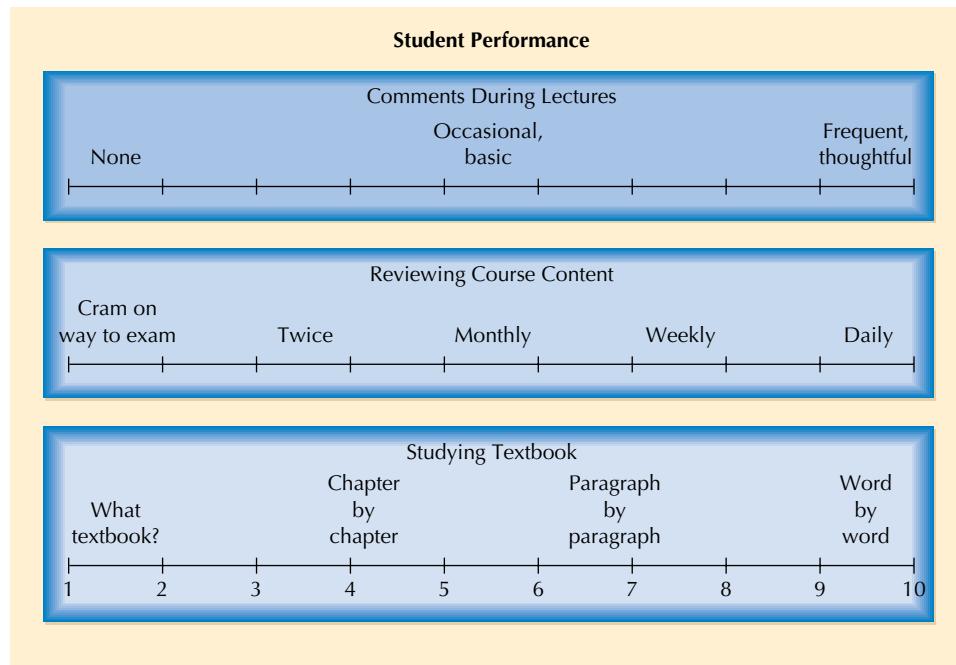
Figure 17.5   A possible rating scale for students. How would you score on this rating scale? Would you like this kind of performance evaluation or do you prefer the traditional rating scale, known as "grades"?

scale. The idea is that raters will be more accurate if they focus on specific *behaviors* rather than *traits*, such as friendliness.

Although rating scales are helpful, they also have drawbacks. As you know, some college instructors can be hard graders, while others may be easy. Supervisors in the work world can be similarly tough or lenient raters. In addition, research shows that supervisors like employees who perform well (Robbins and DeNisi, 1994), and that they do, in fact, give higher ratings to employees they like (Ferris et al., 1994).

Sexual Harassment: An Abuse of Power

What happens to the evaluation process when a supervisor says, "Let's go to the Holiday Inn and negotiate your raise"? Historically, personnel psychologists have been involved with recruitment and selection, training, and evaluation of workers; but today, they are also involved with problems of sexual harassment. The legal definition of **sexual harassment** is unwelcome sexual advances, requests for sexual favors, and other unwelcome verbal or physical conduct of a sexual nature.

A federal study defined three levels of sexual harassment: *less severe* (e.g., sexual teasing, suggestive gestures, sexual remarks), *severe* (e.g., pressure for dates or sexual favors, touching, letters, telephone calls), and *criminal* (sexual assault, attempted rape, and rape). The point is that any pattern of unwelcome sexual behavior may constitute sexual harassment (Egler, 1995). The suggestion to negotiate a raise at a motel was part of an actual court case, and the court ruled that this, and similar behavior, was sexual harassment. The plaintiff was awarded significant damages (Harris v. Forklift Systems, 1993; cited in Aamodt, 1999).

Myths about Sexual Harassment

There are at least three major misconceptions about sexual harassment.

1.   "It's a minor problem." Law Professor Anita Hill's charge that Supreme Court Justice Clarence Thomas sexually harassed her, the U.S. Navy's Tailhook convention, and the Army's Aberdeen scandal all brought national attention to the issue of sexual harassment (Healy, 1998; Shenon, 1997). The most recent case to make the headlines was Paula Jones' sexual harassment lawsuit against President Clinton. Despite such high profile cases, most people still underestimate the prevalence of occupational

Sexual Harassment
Unwelcome sexual advances, requests for sexual favors, and other unwelcome verbal or physical conduct of a sexual nature.
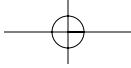
Paula Jones's suit against President Clinton brought renewed debate and attention to the topic of sexual harassment.

sexual harassment and consider it a minor issue. One measure of the prevalence of sexual harassment in the United States may be the number of complaints filed with the EEOC (Equal Employment Opportunity Commission), which rose from 6,000 in 1990 to 15,300 in 1996 (Kaufman, 1997).

In addition to these business settings, sexual harassment also seems to be a major problem in the academic world. A recent survey of more than 1,000 Canadian female students reported that over 23 percent had experienced at least one episode of sexual harassment in the last six months (Bagley et al., 1997). Power is misused to coerce students into sexual acts. Students comply with the perpetrator's demands out of fear of academic repercussions, a need for a letter of recommendation, or desire for a research or work opportunity (Riger, 1991).

2.   "It's overreported." Contrary to misperceptions that charges of sexual harassment are often made for the slightest provocation, a survey by The Working Women United Institute found that when women were harassed 75 percent ignored the harassment. Only 18 percent reported the harassment! Those who did not complain believed nothing would be done. They also worried that they might be blamed and would suffer negative repercussions.

3.   "It's an expression of sexual desire." While the harasser *may* sometimes be attracted to the victim, the harassment is primarily an assertion and abuse of power (Cleveland and Kerst, 1993). Because of the misperception of sexual desire, older or less attractive women who complain of sexual harassment are often ignored or ridiculed ("Don't flatter yourself"). On the other hand, when the victim is young and attractive she is accused of "inviting" a sexual approach. Like other victims of sexual abuse, those who are harassed are often accused of "asking for it."

Sexual harassment is a serious issue. Victims often face severe financial difficulties, such as unemployment, demotion, or loss of promotions if they resist the harassment. On a psychological level, victims also suffer various physical and psychological effects, including nervousness, loss of motivation, sleeplessness, guilt, shame, anger, depression, and helplessness (Charney and Russell, 1994; Rhode, 1997).

Harassment also affects business and academic institutions. It causes stress, poor work or academic performance, absenteeism, and high turnover. The cost of sexual harassment averages at least $6 million a year for a Fortune 500 company (Rhode, 1997).

Recent court cases awarding large sums of money to victims have increased the cost of sexual harassment. Title VII of the 1964 Civil Rights Act imposes liability on companies for sexual harassment and the U.S. Department of Education guidelines can deny federal funds to schools that do not take measures to remedy the situation (Scher, 1997).

Preventing Sexual Harassment

There are several, specific steps that can be taken to reduce the likelihood of sexual harassment and an organization's potential legal liability:

1. All complaints, no matter how trivial or farfetched they appear, must be investigated.
2. Complaints must be kept confidential to protect both the accused and the complainant.
3. Action must be taken to protect the complainant from possible retaliation by the accused.
4. Both the accused and complainant must be given due process, and results of the investigation must be communicated in writing to both parties.
5. The severity of any punishment must match the severity of the violation.

(*Based on:* Bloch, 1995; and Robinson et al., 1993)

What can the victim or target of sexual harassment do to stop the abuse?   Here are several suggestions (Crooks and Baur, 1999):

1. If a professor or an employer harasses you, make your objections clear. A firm "no" is an important first step.

2. Discuss the problem with fellow students or employees. Identifying other victims bolsters your case and provides social and emotional support

3. If the problem continues, keep a detailed record (noting times, dates, locations, possible witnesses, and precisely what was said or done). In addition, contact authorities on the campus or at work. You might begin by consulting another professor or supervisor, whom you trust, to help you determine the appropriate officials and channels for complaints.

4. If the harassment continues and your grievances are not acted upon, you may want to contact your state's civil rights commission and file a formal grievance. Current affirmative action regulations protect those who file harassment complaints from instructor retaliation and from job demotion or firing.

CHECK AND REVIEW

Evaluating Workers, Sexual Harassment

Performance evaluation is the formal procedure an organization uses to assess the job performance of employees. Evaluations can be objective or subjective.

The subjective method is the most popular, but the halo effect (the tendency to rate individuals too high or too low based on one outstanding trait) can create a major problem. To overcome the halo effect, some organizations use "360-degree" multisource measures and special rating scales.

Sexual harassment involves sexual advances, requests for sexual favors, and other unwelcome verbal or physical conduct of a sexual nature. Most sexual harassment is an assertion or abuse of power, not an expression of sexual desire. Victims of sexual harassment often suffer financial losses and psychological difficulties.

QUESTIONS

1. The formal procedure an organization uses to assess the job performance of employees is known as _____. (a) job analysis; (b) the Hawthorne effect; (c) performance evaluation; (d) knowledge and skills evaluation.

2. What are the two major functions of performance evaluations?

3. What is the halo effect?

4. Sexual harassment is primarily _____ and not an expression of sexual desire.

Answers to Questions can be found in Appendix B.

ORGANIZATIONAL PSYCHOLOGY

When it comes to work, most people are social animals—they generally prefer to work with others. **Organizational psychologists** are interested in how interpersonal relations in the work setting affect productivity. In this section, we discuss three topics of special interest to organizational psychologists: managerial style, worker motivation, and job satisfaction.

What does organizational psychology encompass?

Organizational Psychology
The branch of I/O psychology interested in how interpersonal relations in the work setting affect productivity. Topics of interest include managerial style, worker motivation, and job satisfaction.
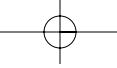
DILBERT. Reprinted by permission of United Features Syndicate, Inc.

Theory X
The proposal that employees dislike working, are lazy, avoid responsibility, and must be prodded or manipulated to perform.

Theory Y
The proposal that employees like to work, are industrious, seek responsibility, and can exercise self-direction.

Participative Decision Making
A decision-making model in which the people involved in implementing a decision are also involved in making it.

Quality Circles
A form of participative decision making involving regular meetings of supervisors and employees to discuss improvement of product or service.
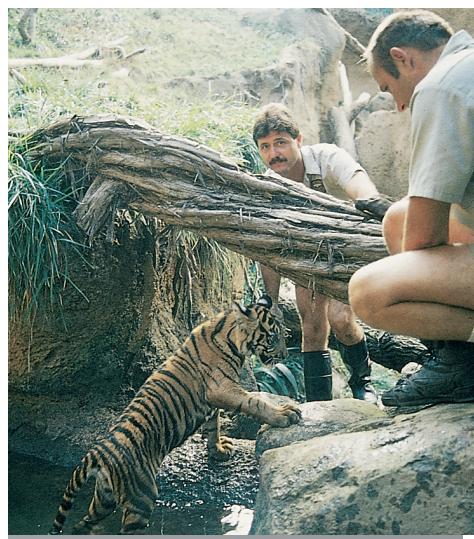
Managerial Style: Theory X and Theory Y

Douglas McGregor (1960) identified two types of managers, each with very different assumptions about human nature—one negative and the other positive. **Theory X** managers believe that employees dislike work, are lazy, avoid responsibility, and must be prodded or manipulated into being productive. Therefore, they believe in close supervision and extrinsic rewards, such as work quotas, bonuses, and commissions to motivate their workers. **Theory Y** managers believe that employees like work, are industrious, seek responsibility, and can exercise self-direction. They do not believe employees need close supervision because they are self-motivated by intrinsic rewards, such as personal feelings of achievement and satisfaction.

Which style do you endorse? McGregor himself favored Theory Y. As business and industry come to recognize that a worker's self-esteem and satisfaction are important to job efficiency, Theory Y is becoming increasingly popular.

An essential part of Theory Y management is **participative decision making,** in which the people involved in implementing a decision are also involved in making it. Theory Y managers realize that participative decision making promotes teamwork and avoids an adversarial relationship between management and employees. In comparison, Theory X managers typically make all decisions and tell employees what to do. Studies support Theory Y. When workers are given a greater voice in how their work will be accomplished, both efficiency and job satisfaction are improved (Ali et al., 1997; Farson, 1996; Greller, 1998; Harrison and Pietri, 1997).

Quality circles are a well-known form of participative decision making in some countries. Employees and employers meet regularly to discuss quality problems, investigate causes, recommend solutions, and take corrective action. The concept of the quality circle originated in Japanese car assembly plants. At the end of the work day or work week, some of the workers from each line meet with their supervisors in a circle (implying equal contributions) to discuss ways to improve efficiency and employee satisfaction (Chaffins et al., 1998; Jewell, 1990; Matsui and Onglatco, 1990).

As implemented in the United States (Figure 17.6), both management and employees initially discuss company problems. Then the circle team members choose which problem to address, and generate and evaluate their own feedback. Management typically retains control over the final decision.

When the San Diego Zoo reorganized animal exhibits into separate, cage free areas that resemble natural habitats, they also instituted participative decision making. Employees formed teams that assumed responsibility for operating and maintaining specific exhibits. For example, the Tiger River exhibit pictured here is self-managed by a team of horticulturists, mammal and bird specialists, and maintenance and construction workers.
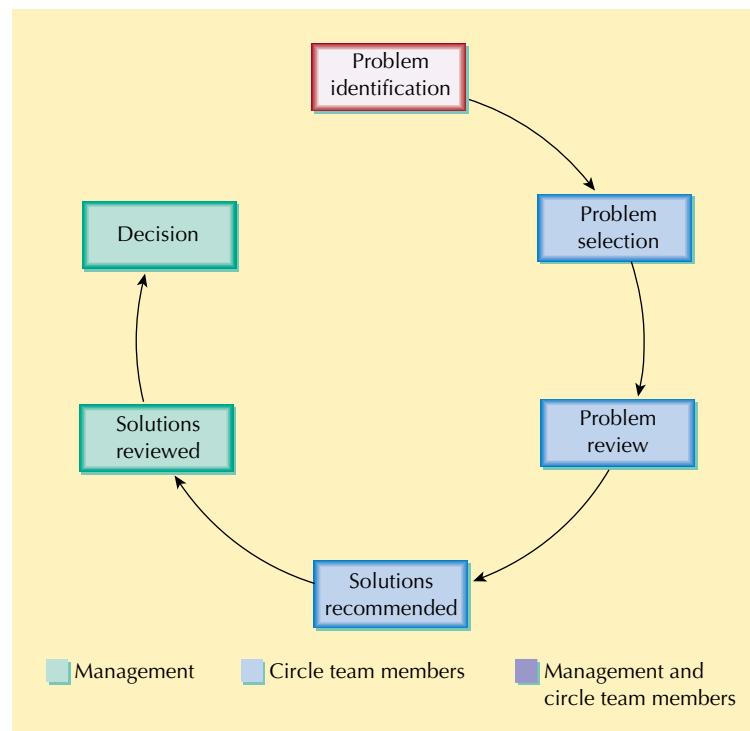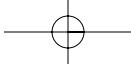
Figure 17.6 *A typical quality circle in the United States.* Note that management and employees begin by identifying problems. The quality circle (composed of employees) then selects which problem to work on, reviews it, and recommends solutions. Management reviews the solutions and makes the final decision. Most quality circles have been discontinued in the United States because management and employees tend to be more adversarial than loyal and trusting.

Do quality circles really work?   Quality circles have not always worked well outside of Japan. In the United States, they seem to improve productivity, but have little or no effect on employee satisfaction, and have been mostly discontinued (Cotton, 1993). Their continued popularity in Japan may reflect Japanese organizational culture, which is based on lifetime employment, mutual respect between employer and employee, use of broad-based consensus to reach decisions, and fierce loyalty and devotion to the company by all employees (Chaffins et al., 1998; Ouchi, 1981). The U.S. organizational culture is quite different.

Worker Motivation: Goal-Setting, Equity, and Expectancy

Why do some workers put in long hours even when they are not being directly compensated, while others arrive late, do the minimum, and leave early if the boss isn't looking? You may have some answers after reading about personality differences and motivation and reinforcement in earlier chapters. In this section, we will explore three theories I/O psychologists have developed about what motivates workers: goal-setting theory, equity theory, and expectancy theory.

Goal-Setting Theory

Did your parents ever tell you to "just do your best?" What does this mean? How do you know when you have succeeded and can quit trying? Research on **goal-setting theory** suggests that setting *specific* and *difficult* goals leads to higher performance (Locke, 1968, 1996).

Goal-Setting Theory
The proposal that having specific and difficult goals leads to higher performance.
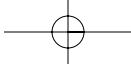
Under Detroit Edison's goals, measures, and targets (GMT) program, teams of employees define their joint and individual goals and performance measures. This photo shows a welder replacing boiler tubes at one of the company's power plants. Employees generated this cost-reduction project, which saved Detroit Edison $200,000 over the lowest bid from outside contractors. The savings were passed on to employees.

Equity Theory
The idea that individuals are driven by a need to maintain equilibrium or balance. In a work setting, employees prefer jobs in which the output is equal to the input. If imbalances occur, workers adjust their input, output, or their psychological perceptions.

Expectancy Theory
The idea that expectancy of outcomes, their desirability, and the effort needed to achieve them all determine worker motivation.

All things being equal, a person with specific goals will outperform someone without goals or with only a generalized "do my best" goal. For instance, when a sales representative commits to making 20 new contacts per week, he or she is setting a specific objective or goal. Also, the more difficult the goal (as long as it remains within reach), the greater the motivation. This theory enjoys wide support (Durham et al., 1997; Gilbourne and Taylor, 1998; Lee et al., 1997).

Equity theory

Have you ever worked for an employer who regularly asked for special favors, such as coming in on your day off? How would you respond if this same employer later refused to let you rearrange your lunch hour for a doctor's appointment? According to **equity theory,** we are strongly motivated to maintain a state of equilibrium or balance. We not only compare our contributions to that of our employer, we also compare our job's rewards and compensations with those of others (friends, neighbors, coworkers, colleagues in other organizations) and previous jobs (Beckett-Camarata et al., 1998; van Dierendonck et al., 1998; Wilpert, 1995).

If we compare our job contributions and job rewards and detect an imbalance (we're giving more than we're getting in return), we may quit or decrease our efforts in an effort to restore balance. If this doesn't work, we may change our psychological perceptions, by focusing on other compensations such as time off, ease of work, and so on. Balance is very important to workers, according to equity theory. If perceived *job input* (contributions) matches perceived *job outcome* (rewards), balance (or equity) is achieved and the worker goes home happy.

When an imbalance exists (the employer asks for extra consideration but is unwilling to return the favor), the worker is motivated to rebalance the relationship by altering inputs and outcomes or by psychologically adjusting his or her perception of the gains and losses. We can give the employer less, ask for more, or alter our thinking, e.g., "the boss would let me rearrange lunch if it were possible."

Expectancy Theory

One of the most popular theories of worker motivation is **expectancy theory,** the idea that workers perform in line with their expectancy of outcomes, the desirability of those outcomes, and the effort needed to achieve them. Before deciding to work hard (or not to work hard), individuals supposedly ask themselves three questions:

1. *What can I reasonably expect from my efforts?* If employees perceive that rewards such as salary increases, bonuses, and promotions are based on hard work, they will work hard. On the other hand, if workers believe rewards are based on factors such as seniority or politics, both motivation and morale will be extremely low.

2. *Do I really want the rewards offered by management?* If you've been working hard hoping for a salary increase, but are offered a promotion with increased responsibility and only a small bonus, you will obviously be disappointed. Similarly, if you had put in long hours hoping for a transfer to the West Coast office, but instead were offered the East Coast, you would be very disappointed. Managers should recognize that individual workers have different ideas of what is rewarding.

3. *If I give maximum effort, will it be reflected in my job evaluation?* For some employees, the answer is too often no. If you lack the training or necessary skill level for a particular job, you are unlikely to be a high performer, no matter how hard you try. On the other hand, some workers are qualified but their supervisors may be unfair or may not like them. Regardless of their efforts, these external situations may block them from getting a good evaluation.

Try This Yourself

If you are a manager interested in increasing worker motivation (or someday hope to be), here are three ways you (and your employees) can benefit from expectancy theory:

1. *Clarify the route to rewards.* Be sure that promotions, salary increases, and bonuses are based on clear, definable measures of performance. Communicate these measures to your employees and give them frequent feedback on their efforts.
2. *Personalize the payoffs.* Ensure the rewards you've chosen for good performance are meaningful or valued by your employees. Ask employees to help design payoffs that fit their personal goals and expectations.
3. *Reward maximum effort.* Begin by establishing a good fit between employees and their job assignments, and then ensure that employees are well trained. Once established in the work position, provide employees frequent evaluation on their work, including feedback on how their current performance level will affect their long-term job promotions and raises.

In sum, general knowledge of the three major worker motivation theories (goal-setting, equity, and expectancy) and implementation of this knowledge can help improve your own job performance and your management of others.

Job Satisfaction: What are the Important Factors?

What is the worst job you have ever had? What made it so bad? Was it the working conditions or low pay? Perhaps it was the work itself. Or maybe you just hated sitting at a desk for eight hours. Job satisfaction research is a high priority for I/O psychologists. In this section, we examine why managers should be concerned about employee job satisfaction (benefits to management and employees), and what factors determine worker satisfaction (personality/job factors).

Benefits to Management and Employees

Workers obviously prefer jobs that are rewarding and satisfying. But why should managers or business owners care if their employees are satisfied or not? According to research, there are several reasons:

1. **Decreased resignations**   Dissatisfied workers are more likely to resign or be absent from work (Tharenou, 1993). Because turnover and absenteeism are expensive, managers generally try to reduce them (Hellman, 1997; O'Quin and LoTempio, 1998).
2. **Increased productivity**   Research shows that job satisfaction leads to increased productivity (Ostroff, 1992; Wilk and Redmon, 1998). Although some early studies questioned this assumption, (e.g., Brayfield and Crockett, 1988), when satisfaction and productivity data are gathered for the organization as a whole rather than at the individual level, Ostroff found that organizations with more satisfied employees tend to be more effective.
3. **Employee health**   Studies show that satisfied workers have less stress, less "burnout," and better physical and psychological health (Bhatt, 1997; Pearson, 1998; Siu et al., 1997; Tang, 1998). In addition, satisfaction on the job apparently carries over to the employee's life outside the office. Job satisfaction not only contributes to overall quality of life, but it may be a better predictor of length of life than physical condition or tobacco use (Judge and Watanabe, 1993).

Why should employers care if workers are happy? Job satisfaction research shows important benefits to both employer and employee.

Personality/Job Factors

Now that we know that job satisfaction is important to both employer and employee, how do we discover what determines job satisfaction? One of the most interesting
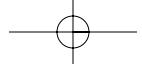
"All work and no play makes you a valued employee."

Personality-Job Fit Theory
This theory identifies six personality types and proposes that a "good fit" between personality type and occupation determines job satisfaction.

and influential answers comes from John Holland (1985, 1994). According to Holland's **personality-job fit theory,** a match (or "good-fit") between a person's personality and occupation is a major factor in job satisfaction.

Holland developed a *Self-Directed Search* questionnaire that scores each person on six personality types and then matches them with various occupations. By matching personality types to appropriate occupations, Holland believes workers will bring the right interests and abilities to a job's demands. This "good fit" match between personality and occupation ensures success on the job and a higher level of job satisfaction (people tend to like what they are good at). Studies generally support Holland's theory (Hesketh and Myors, 1997; Judge and Cable, 1997; Maurer and Tarulli, 1997; Young et al., 1998).

Try This Yourself

Would you like to know which occupations might best match your own personality? Choose which of the personality descriptions on the left that most closely describes you, and then check the column on the right that lists matching/congruent occupations.

Personality Characteristics	*Holland's Six Types*	*Matching/Congruent Occupation*
Shy, genuine, persistent, stable, conforming, practical	1. Realistic: Prefers physical activities that require skill, strength, and coordination	Mechanic, drill press operator, assembly-line worker, farmer
Analytical, original, curious, independent	2. Investigative: Prefers activities that involve thinking, organizing, and understanding	Biologist, economist, mathematician, news reporter
Sociable, friendly, cooperative, understanding	3. Social: Prefers activities that involve helping and developing others	Social worker, counselor, teacher, clinical psychologist

Personality Characteristics	*Holland's Six Types*	*Matching/Congruent Occupation*	*Personality Characteristics*	*Holland's Six Types*	*Matching/Congruent Occupation*
Conforming, efficient, practical, unimaginative, inflexible	4. Conventional: Prefers rule regulated, orderly, and unambiguous activities	Accountant, bank teller, file clerk, corporate manager	Self-confident, ambitious, energetic, domineering	6. Enterprising: Prefers verbal activities where there are opportunities to influence others and attain power	Lawyer, real estate agent, public relations specialist, small business manager
Imaginative, disorderly, idealistic, emotional, impractical	5. Artistic: Prefers ambiguous and unsystematic activities that allow creative expression	Painter, musician, writer, interior decorator			

(*Source:* Adapted from *You and Your Career* by J. L. Holland, 1985).

R ESEARCH HIGHLIGHT

Job Satisfaction And Psychotherapy

Have you ever wondered about the work life of a psychotherapist? Is this a satisfying career? What are the most significant stressors and rewards? How do therapists cope when they have work-related problems?

Psychotherapy has always been a complex and demanding job, and earlier surveys documented numerous occupational hazards (Deutsch, 1985; Farber and Heifetz, 1981; Nash et al., 1984). These hazards could be categorized as (1) business-related problems (economic uncertainty, record keeping), (2) client-related issues (suicidal threats), (3) personal challenges of the psychotherapist (constant giving), (4) setting-related stressors (excessive workload), and (5) evaluation-related problems (difficulty evaluating client progress).

To add to this list, modern therapists also face problems from an increasingly litigious society and the expansion of managed care (Coster and Schwebel, 1997). With everyone more willing to sue these days, therapists must keep more detailed records. Expanded managed care creates even more paperwork, and its bureaucracy reduces the therapist's independence.

Which of these hazards is most stressful? Researchers Barbara Kramen-Kahn and Nancy Downing Hansen (1998) recently surveyed over 200 psychotherapists to identify their top occupational hazards, as well as, their personal coping strategies.

Their respondents rated business and economic demands and uncertainties, along with time and workload pressures as their top stressors. The most frequent coping methods were a sense of humor, freely consulting with other therapists, participating in leisure activities to balance work stresses, attending continuing education seminars, perceiving client problems as interesting, and using interpersonal supports.

Are there rewards in psychotherapy that offset the stress? According to the survey participants, the greatest rewards are seeing clients improve and grow, their own opportunities for self-growth, challenging and diverse tasks, and professional autonomy. It is interesting that female thera-pists reported greater occupational rewards and use of coping strategies than male therapists. Kramen-Kahn and Hansen suggest that this gender difference may reflect the fact that women are generally more relational than men (Jordan et al., 1991), and that therapy is an essentially relational occupation.

What can we learn from this research? Therapists should obviously try to reduce their perceived hazards, increase the rewards, and use more coping strategies. There is also a lesson for all of us in this research. Given the human tendency to react more strongly to (and perhaps have a longer memory for) aversive events—especially interpersonal ones (Rook, 1984), we might try to ignore the problems of our work and actively search for possible overlooked rewards. We could also emulate the therapists' most successful coping strategies. Developing a sense of humor and balancing work and leisure are important life skills for everyone.
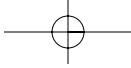
✔ # CHECK AND REVIEW

Organizational Psychology

Organizational psychologists study how interpersonal relations affect productivity. Theory X managers take a negative approach, believing employees need close supervision and extrinsic rewards for motivation. Theory Y managers are positive and believe employees are self-motivated. Theory Y managers often use participative decision making, such as quality circles—groups of employees who meet regularly with supervisors to solve problems.

Goal setting is one major way to motivate workers; having specific and difficult goals improves performance. Equity theory says workers are motivated if they perceive that their job inputs match the perceived rewards. Expectancy theory, on the other hand, maintains that employees are motivated to work according to their expectancy of outcomes, the desirability of those outcomes, and the effort needed to achieve them.

Job satisfaction is important to both employer and employee. Employers gain because they save money (lower absenteeism and fewer resignations) and increase productivity. Employees gain because they are under less stress, enjoy better physical health, and have an improved overall quality and length of life.

According to personality-fit theory, job satisfaction results from a match between personality and occupation. Supportive colleagues, supportive working conditions, mentally challenging work, and equitable rewards are also important.

QUESTIONS

1. Briefly explain participative decision making, and why quality circles have been less successful in the United States than in Japan.

2. Identify the worker motivation theory that best explains the following situations:
   (a) Seong enjoys assignments that are difficult but attainable.
   (b) Denise avoids work and responsibility, but does not fear being fired because she is best friends with the boss and enjoys high seniority.
   (c) Juan, a salaried employee, feels he is being underpaid so he decides to cut back on his hours at work.

3. How does management benefit when employees have job satisfaction? What are the major benefits of job satisfaction to employees?

4. The theory that a match between a person's personality and occupation results in increased job satisfaction is known as _____. (a) expectancy theory; (b) the halo effect; (c) participative decision making; (d) personality job-fit theory.

Answers to Questions can be found in Appendix B.

Are You In The Right Job?

An important component of critical thinking is the ability to *define problems accurately*. By carefully identifying the problem in clear and concrete terms, critical thinkers prevent confusion and lay the foundation for gathering relevant information. For example, in choosing a career, first identify what you like and do not like about your current (and past) jobs. With this information in hand, you are then prepared to research jobs that will better suit your interests, needs, and abilities. To help your analysis, answer "Yes" or "No" to these questions:

_____ 1. Is there a sufficient amount of laughter and sociability in your workplace?

_____ 2. Does your boss notice and appreciate your work?

_____ 3. Is your boss understanding and friendly?

_____ 4. Are you embarrassed by the physical conditions of your workplace?

_____ 5. Do you feel safe and comfortable in your place of work?

_____ 6. Do you like the location of your job?

_____ 7. If you won the lottery and were guaranteed a lifetime income, would you feel truly sad if you also had to quit your job?

_____ 8. Do you watch the clock, daydream, take long lunches, and leave work as soon as possible?

_____ 9. Do you frequently feel stressed and overwhelmed by the demands of your job?

_____10. Compared to others with your qualifications, are you being paid what you are worth?

_____11. Are promotions made in a fair and just manner?

_____12. Given the demands of your job, are you fairly compensated for your work?

Now score your answers. Give yourself one point for each answer that matches the following: 1. No; 2. No; 3. No; 4. Yes; 5. No; 6. No; 7. No; 8. Yes; 9. Yes; 10. No; 11. No; 12. No.

The questions you just answered are based on four factors that research shows are conducive to job satisfaction: supportive colleagues, supportive working conditions, mentally challenging work, and equitable rewards (Robbins, 1996). Your total score reveals your overall level of dissatisfaction, while a look at specific questions can help identify which of these four factors is most important to your job satisfaction—and most lacking in your current job.

Supportive Colleagues (Items 1, 2, 3). For most employees, work fills important social needs. Therefore, having friendly and supportive colleagues and superiors leads to increased satisfaction.

Supportive Working Conditions (Items 4, 5, 6). Not surprisingly, studies find most employees prefer working in safe, clean, and relatively modern facilities. They also prefer jobs close to home.

Mentally Challenging Work (Items 7, 8, 9). Jobs with too little challenge create boredom and apathy, while too much challenge creates frustration and feelings of failure.

Equitable Rewards (Items 10, 11, 12). Employees want pay and promotions based on job demands, individual skill levels, and community pay standards.

*K*EY TERMS

Visual Summary for Chapter 17

The Development of I/O Psychology

Industrial/Organizational (I/0) Psychology: studies how individual behavior affects and is affected by the physical environment and the organizational culture of the workplace.

The Beginnings

- Scott, Taylor, and Munsterberg were major founding contributors to I/0 psychology.

- World War I: Personnel needs gave **I/0** respectability. Based on newly developed group IQ tests, Scott developed a program to place recruits in jobs suiting their abilities.
  Hawthorne effect: people change their behavior because of the novelty of a research situation or because they know they're being observed.

Modern Times

- World War II: led to scientifically designed worker training programs to improve productivity for the war effort. After the war, many I/0 psychologists turned from manufacturing to management, thus creating *organizational psychology*.

- Civil Rights Act of 1964: **I/0** psychology's creation of employment tests, training programs, and recruitment programs that ignored ethnicity, religion, age, or gender.

Human Factors Psychology

Human factors psychology studies ways to improve the design and function of machines and the work environment to better meet the needs of human users.

Human-machine system: an arrangement of people and machines, tools, and other devices that produce a product or service. Human: sensory functions (input) and cognitive and motor functions (output). Machine: **displays** (output) and **controls** (input). The Human-Machine System:

Displays: Machines "talk" to human operators through their displays (video monitors, gauges, bells, and blinking lights).

Controls: Humans "talk" to machines by inputting instructions via machine controls (dial, wheel, switch, and keyboard).

Personnel Psychology

Personnel psychology: involved with recruiting, selecting, training, and evaluating workers.

Recruitment and Selection

Recruitment begins with a j**ob analysis,** a detailed description of the skills, knowledge, and activities required in a particular job. Selection often based on interviews. Structured (vs. unstructured) interviews are better predictors of future job performance. Prepare for an interview by doing research on the company, role playing, and emphasizing desirable personality traits.

Employee Training

Orientation programs transmit **organizational culture**, group's shared pattern of thought and action.
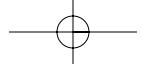
▶ Personnel Psychology (cont.)

Evaluating Workers

Performance evaluation: formal procedure used to assess employee job performance. Evaluations can be objective or subjective. Subjective method most popular, but the **halo effect** (tendency to rate individuals too high or too low based on one outstanding trait) can be a problem. New techniques include "360-degree" multisource measures and special rating scales.

Sexual Harassment

Sexual harassment: sexual advances, requests for sexual favors, and other unwelcome verbal or physical conduct of a sexual nature. Most sexual harassment is an assertion or abuse of power, not sexual desire. Victims often suffer financial losses and psychological difficulties.

▶ Organizational Psychology

Organizational psychology studies how interpersonal relations affect productivity.

Managerial Style: Two Theories

Theory X: negative approach (believing employees dislike work, thus need close supervision and extrinsic rewards for motivation).

Theory Y: positive approach (believing employees like work and are self-motivated).

Theory Y managers often use **participative decision making**, such as **quality circles**—groups of employees who meet regularly with supervisors to solve problems.

Worker Motivation: Three Major Theories

Goal setting theory: setting specific and difficult goals improves performance.

Equity theory: workers are better motivated if they perceive a balance between their job inputs and their perceived rewards.

Expectancy theory: employees perform according to the likely outcomes, the desirability of those outcomes, and the effort needed to achieve them.

Job Satisfaction: Importance of Job Satisfaction

Employees have less stress, better physical health, improved quality and length of life.

Employers save money from lower absenteeism, less turnover, increased productivity.

According to **personality-job fit theory**, job satisfaction comes from a match (or "good-fit") between personality and occupation.