

# **Instructor's Manual and Test Bank**

*for*

Schultz and Schultz

## **Psychology and Work Today**

**Tenth Edition**

*prepared by*

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**Prentice Hall**

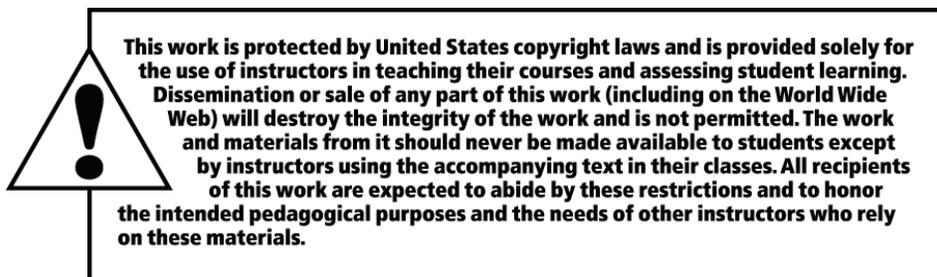
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**Prentice Hall**  
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[www.pearsonhighered.com](http://www.pearsonhighered.com)

ISBN-10: 0-205-68359-2  
ISBN-13: 978-0-205-68359-8

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## PREFACE

I am delighted to present the Instructor's Manual to accompany the tenth edition of *Psychology and Work Today*, by Duane Schultz and Sydney Ellen Schultz. My goal for this edition was to build on the excellent efforts of those who prepared its previous incarnations and reflect the many changes made to the current edition of the text. To this end, I have updated the learning objectives, definitions of key terms, answers to the review questions at the end of each chapter, the practical exercises, and test questions (true-false, short answer, and multiple choice).

In addition, I have added a **Lecture Outline** section which provides the contents of the accompanying PowerPoint slides for each chapter in Word format to enhance ease of use and reference. I also included a **Website** section that provides a list of relevant websites for each chapter. Finally, I worked on formatting to improve the overall readability of the manual.

For any additional accompanying support materials, including PowerPoint slides, please contact your Prentice Hall representative for instructor support, or go [www.pearsonhighered.com](http://www.pearsonhighered.com).

Best regards,

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# CHAPTER 1

## Principles, Practices, and Problems

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### LEARNING OBJECTIVES

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After reading and studying Chapter 1, students should be able to:

- Describe Industrial-Organizational (I-O) psychology, what I-O psychologists do, and where they work.
- Outline the scope and history of I-O psychology.
- Understand how I-O psychologists conduct research.
- Identify the major areas of I-O psychology.
- Explain the contemporary challenges facing I-O psychologists.
- Know what they can do with an I-O major.
- Describe the problems faced by I-O psychologists.

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### LECTURE OUTLINE

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#### Why Do We Work?

Is it just about the money?

What else is there?

Personal satisfaction, fulfillment, and pride of accomplishment

Emotional security, self-esteem, and contentment

Identity and status, friendships and belonging

#### What is I-O Psychology?

Def. - The application of the methods, facts, and principles of psychology to people at work.

It is a SCIENCE

Deals with observable behavior

Behaviors reflect underlying psychological processes

*Empirical* in its approach to research

*Objective* in its methods and results

#### Topics of Interest for I-O Psychologists

Human Resources Development

Selection

Testing

Performance appraisal

Training & Development

Organizational Psychology

Leadership

Motivation, satisfaction, Involvement

Organization

Workplace Characteristics

Working conditions

Safety, violence & health

Stress

Engineering Psychology

Consumer Psychology

### **Research Methods used by I-O Psychologists**

Observe the behavior of employees on the job under well-controlled and systematic conditions

Record behavioral responses

Vary the conditions and measure resulting changes

Look, listen, measure, and record according to scientific method

### **The Pioneers of I/O**

Walter Dill Scott (1869-1955)

First to apply psychology to advertising, employee selection, & management

Wrote *Theory and Practice of Advertising* (1903)

Formed first consulting company in Industrial Psychology (1919)

Hugo Munsterberg (1863-1916)

*The Psychology of Industrial Efficiency* (1913)

Goal of improving worker efficiency

Used tests to measure skills and match workers to jobs

Conducted research in the workplace

Wrongfully accused of being a German spy in WWI

### **Psychological Testing in WWI**

WWI marked the emergence of I-O psychology as an important discipline

Testing

*Army Alpha*

For recruits who could read & write

*Army Beta*

For recruits who couldn't read or speak English

*Personal Data Sheet*

To detect neurotic tendencies

Officer & pilot selection tests

## **The Hawthorne Studies**

Western Electric Co. Hawthorne Works

Long-term study begun in 1924

Studied effects of work environment on employee efficiency

Findings:

Social & psychological factors in the work environment had the potential to effect organizational outcomes as much or more than physical factors

Opened up new areas of research

Leadership, informal groups, attitudes, communications, motivation, satisfaction

Criticized for lack of scientific rigor

## **WWII and Engineering Psychology**

More than 2000 psychologists contributed to the war effort

Focused on testing, classifying and training millions of recruits

Complex weapons sparked engineering psychology

Human abilities and limitations

Equipment design

Work-place design

Increased stature of I-O to Government and Business

## **Contemporary I/O**

Concern with organizational issues

Human relations

Leadership

Motivation

Job satisfaction

Organizational structure and climate

Decision making

## **Challenges for I-O Psychology**

Virtual workplace and virtual workers

Contingent or temporary workers

Worker involvement

Technological advances

Worker literacy

Globalization

Increasing demographic diversity

Generational differences in values

### **What Are Marketable Skills of I-O Psychologists?**

- Psychological testing, and survey construction and validation
- Human resources selection and placement
- Performance appraisal
- Fair employment practices
- Employee training

### **What Can You Do With a Psychology Major?**

- 50% work for private corporations
  - Most are in managerial positions
  - The rest work in sales, human resources, training, and other staff functions
- 15% are employed by government agencies
- 14% find jobs in education 12% run their own businesses
- 9% work for charitable organizations.

### **Types of Jobs for I-O Psychologists**

- Human Resources Consultant
- Market Research
- Assessment Centers
- Manager of Psychological Services
- Organizational Planning and Development
- Training
- Academics

### **Annual Income for I-O Psychologists**

- Masters Degree
  - Median: \$79,000
  - All Psychologists Median: \$74,000
- PhD
  - Median: \$98,500
  - All Psychologists Median: \$55,000

### **Problems Faced by I-O Psychologists**

- Fraudulent practitioners
- Credentials and certification
- Communication with management
- Resistance to new ideas
- Research versus application?

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### **KEY TERMS (p. 22)**

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**Industrial-Organizational (I-O) psychology** – the application of the methods, facts, and principles of the science of behavior and mental processes at work. (p. 7)

**Hawthorne studies** – a long-term research program at the Hawthorne, Illinois, Western Electric Company plant. It documented the influence of a variety of managerial and organizational factors on employee behavior. (p. 8)

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## WEBSITES

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- The Society for Industrial Organizational Psychology - <http://www.siop.org>
- The American Psychological Association - <http://www.apa.org>
- The Industrial Psychologist - <http://www.siop.org/tip/tip.htm>

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## REVIEW QUESTIONS (pp. 22-23)

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1. Describe some ways in which the kind of work you do affects your life off the job.  
This question provides students an opportunity to address concepts and themes that relate to the course content.
2. How will the findings of I-O psychologists influence the way in which you perform your job? (pp. 5-6)
  - I-O influences performance through research on a variety of processes, including:
    - Recruitment
    - Selection
    - Training
    - Ergonomics and Safety
    - Job attitudes such as job satisfaction
    - Absenteeism, tardiness and turnover
3. How does I-O psychology influence everyday life, even away from work? (p.3)
  - Enjoyment of a job can result in:
    - Personal satisfaction, fulfillment and pride of accomplishment
    - Emotional security, self-esteem and contentment
    - A sense of identity, status, friendships and positive social experiences
    - Single most reliable predictor of a long life is job satisfaction
  - Unhappiness with job can result in:
    - Tedium, monotony and physical hazards
    - Stress, anxiety and dissatisfaction which leads to long-term physical and emotional health issues
    - Work dissatisfaction can bring discontent home that is inflicted on family and friends
4. Give examples of ways in which I-O psychology can save money for your employer. (p. 6)
  - Reduce absenteeism
  - Reduce turnover of personnel
  - Improve communication between management and workers
  - Enhance job satisfaction
  - Ensure the hiring of only the best qualified applicants for a job

5. Explain how psychology as a science deals with aspects of behavior such as motivation, emotion, and intelligence, which cannot be objectively observed. (p. 7)
  - They observe the behavior of employees on the job under well-controlled and systematic conditions
  - They record behavioral responses such as the number of parts produced each hour on an assembly line
  - They vary the conditions under which a job is performed and measure any resulting differences in performance.
6. How did World War I influence the development of I-O psychology? (p. 8)
  - WWI marked the emergence of I-O psychology as an important discipline
  - Intelligence Testing
    - *Army Alpha* for recruits who could read and write
    - *Army Beta* for recruits who couldn't read or speak English
  - Personal Data Sheet
    - A personality test designed to detect neurotic tendencies in officer and pilot candidates
7. In what ways did the following individuals contribute to the development of I-O psychology? (pp. 7-10)
  - *Walter Dill Scott*
    - First to apply psychology to advertising, employee selection, and management
    - Wrote Theory and Practice of Advertising (1903)
  - *Hugo Münsterberg*
    - Wrote The Psychology of Industrial Efficiency (1913)
    - Goal of improving worker efficiency
    - Used tests to measure skills and match workers to jobs
    - Conducted research in the workplace
  - *Elton Mayo*
    - Head of Harvard's Department of Industrial Research
    - Conducted the Hawthorne studies at the Western Electric plant in Hawthorne, IL, which documented the influence of a variety of managerial and organizational factors on employee behavior
8. Explain how the results of the Hawthorne studies opened new areas for I-O psychologists to explore. (p. 10)
  - Begun in 1924, the Hawthorne studies examined effects of work environment on employee efficiency
  - Found that social and psychological factors in the work environment were of potentially greater importance than physical factors
  - Opened up new areas in leadership, the formation of informal groups among works, employee attitudes, and communication patterns
  - Also identified managerial and organizational variables influencing efficiency, motivation, and satisfaction

9. Describe the impact of World War II on the development of I-O psychology. (p. 10)
- Brought more than 2000 psychologists directly into the war effort
  - Major contribution was the testing, classifying, and training of millions of military recruits
  - New skills were required to operate sophisticated aircraft, tanks, and ships, and military needed to identify capable people
  - Success in these areas helped business recognize the value of I-O to the workplace
10. What are some advantages and disadvantages of electronically connected virtual workplaces? (pp. 10-11)
- *Advantages*
    - Work offsite and reduce costs of physical plant
    - Communication through a variety of media
    - Instant access to information wherever there is internet access
  - *Disadvantages*
    - Workers expected to work or be available well beyond regular work hours
    - Tethered to the office – 24/7 culture
11. In what ways can the hiring of temporary workers affect a company's full-time employees? (p. 11)
- According to Davis-Blake, Broschak, and George (2003):
    - Use of contract workers resulted in a decrease in the full-time workers' loyalty to the organization
    - Full-time workers also reported that their relations with management had deteriorated
  - Full-time workers expected to train temps and hold them accountable for tasks performed by temps, increasing both workload and responsibility for full-timers
  - Full-time employees believed they had more prestige and a more demanding workload than temps (DeCuyper & DeWitte, 2006)
12. How have the trends toward virtual employees, virtual workplaces, and globalization changed the ways in which jobs are performed? (pp. 10-13)
- The virtual workplace is one where employees operate remotely from each other and from managers; employees often work off-site; telecommuting is frequent; workers need to be skilled in information technology and information management; workers are often expected to work or be available beyond the normal working hours; 37 percent of I-O psychologists point to the impact of technology and Internet-related developments as the most important future trend in the field.
  - Workers expect more involvement and participation; managers no longer can rule by command; now they function more as guides and leaders.
  - There is a radical change in the application of technology to enhance productivity.
  - Many corporations are outsourcing jobs overseas, leaving workers unemployed at home. Workers will need to continually upgrade skills.

13. What challenges does the changing ethnic composition of the U.S. workforce offer for I-O psychologists? (pp. 14-15)

- Changes in selecting and training workers
- Redesigning jobs and equipment
- Refining management practices
- Raising morale
- Dealing with health and safety issues

14. Distinguish between the four generations in today's workforce. (pp. 14-15)

- *Silent Generation (1922-1945)*
  - Nearing end of working careers or retired, but retain positions of power
  - Tend to be hardworking, respectful of authority, and loyal to their employer and expect loyalty in return in terms of retirement benefits
  - Typically worked for only one or two employers
- *Baby Boomers (1946-1964)*
  - Largest generation
  - Had to become extremely competitive to find jobs and promotions
  - Workaholics who sacrificed family for pay and promotions
- *Generation X (1965-1979)*
  - Products of Boomer parents
  - Deliberately avoiding path of parents
  - More open to non-traditional work
  - Sophisticated users of computer technology
  - Likely to question authority and value autonomy and independence in work and private lives
- *Generation Y (1980-?)*
  - Will constitute almost half of workforce by 2012
  - The "most praised" generation
  - Self-centered and require constant adulation, feedback and recognition from bosses (Zaslow, 2007)
  - Entrepreneurial and want meaningful work right away
  - Would rather have free time than money
  - Feel little loyalty and switch jobs frequently
  - Want work and co-workers to be fun

15. Describe some of the characteristics of your generation. Do you think this is a fair description of yourself?

This question will elicit a variety of perspectives, particularly if members of multiple generational groups are represented in your class

16. What kinds of jobs could you obtain with a bachelor's degree in psychology? Suppose you earned a PhD in I-O psychology; for what kinds of jobs would you be qualified? (pp. 15-16)
- Bachelor's degree – find professional jobs in their specialty areas at competitive salaries in industry, government, consulting firms, and research organizations.
  - Higher positions in businesses and universities typically require a PhD
  - Median Salaries (2007)
    - *Master's* degree – \$79,000 (vs. \$55,00 for all Psychology Masters)
    - *Doctoral* degree – \$98,500 (vs. \$74,000 for ally Psychology PhDs)
17. What unique problems do I-O psychologists face in today's workplace? Which of these problems do you think is the most serious? (pp. 17-19)
- Fraudulent practitioners
  - Need for credentials and certification
  - Communication with management (getting management to understand and listen)
  - Worker resistance to new ideas
18. Describe the controversy between research and application. (pp. 19-20)
- Research is often seen as too technical and difficult to apply
  - Researchers seen as interested in theory and methods, not practical application
  - Research is often not oriented toward real-world problems
  - Psychologists who work for organizations know that research and application are interdependent
  - Organizations are often looking for a quick fix; research “takes too long”

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## PRACTICAL EXERCISES

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1. Have students go online with the American Psychological Association ([www.apa.org](http://www.apa.org)) and the Society for Industrial and Organizational Psychology ([www.siop.org](http://www.siop.org)) to find and report information relating to:
- Student membership
  - Society for Industrial-Organizational Psychology
  - Division of Military Psychology
  - Division of Applied Experimental and Engineering Psychologists
  - Society for Consumer Psychology
  - Job market for I-O psychologists (find three jobs each that would be of interest)

2. To generate discussion relating to I-O psychology (and the organization of the text), ask students to rate their interest in the following topics. Scores can be posted on the black/white board, medians then can be plotted, and individual differences in interests noted and discussed. This is a good way to introduce and preview the course (and find out about student interest and motivation).

	(1) Very Disinterested	(2) Somewhat Disinterested	(3) Neutral	(4) Somewhat Interested	(5) Very Interested
Research methods - Ch. 2					
Employee selection principles & techniques - Ch. 3					
Psychological testing - Ch. 4					
Performance appraisal - Ch. 5					
Training & development - Ch. 6					
Leadership - Ch. 7					
Motivation, job satisfaction, & job involvement - Ch. 8					
The organization of the organization - Ch. 9					
Working conditions - Ch. 10					
Safety, violence, & health in the workplace - Ch. 11					
Stress in the workplace - Ch. 12					
Engineering psychology - Ch. 13					
Consumer psychology - Ch. 14					

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## CHAPTER 1 TEST ITEMS

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### TRUE-FALSE

1. Work contributes to an employee's self-esteem and emotional security. (T, p. 3)
2. If the methods and findings of I-O psychology are used improperly by management or are misunderstood by employees, they can do more harm than good. (T, p. 5)
3. I-O psychology began in the early 19<sup>th</sup> century. (F, p. 10)
4. Hugo Münsterberg is the author of *The Psychology of Industrial Efficiency* (1913). (T, p. 8)
5. The Army Alpha was designed to detect neurotic tendencies in WWI recruits. (F, p. 8)
6. The Army Beta was designed for WWI recruits who could not read English. (T, p. 8)
7. WWI marked the emergence of I-O psychology as an important discipline. (T, p. 8)
8. The Hawthorne Studies found that physical factors were more important than social factors in contributing to work performance. (F, p. 9)
9. The complex weapons used in WWII sparked the development of engineering psychology. (T, p. 10)
10. The use of temporary workers can have negative effects on the organization's full-time employees. (T, p. 11)
11. The concept of globalization results in shifting jobs to places with lower labor costs. (T, p. 13)

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12. Most I-O masters degree graduates find professional jobs in their specialty areas at competitive salaries. (T, p. 15)
13. The median income for I-O psychologists with a master's degree is lower than the median for all psychologists with a similar degree. (F, p. 16)
14. More than half of doctoral candidates receiving a PhD in I-O psychology today are women. (T, p. 16)
15. The number of women receiving degrees in I-O psychology has decreased over the last decade. (F, p. 16)
16. SIOP takes the position that I-O psychologists should be licensed. (F, p. 19)
17. Employees always welcome the changes that are developed and implemented by I-O psychologists. (F, p. 19)
18. The fundamental issue confronting I-O psychologists working in the private sector is that research and application are not compatible (F, p. 20)

### **LISTING/SHORT ANSWER**

1. Why is a job more than a paycheck? (p. 4)
  - Personal satisfaction, fulfillment, and pride of accomplishment
  - Emotional security, self-esteem, and contentment
  - Identity and status, friendships and belonging
2. What is I-O psychology? (p. 7)
 

The application of the methods, facts, and principles of psychology to people at work
3. How do I-O psychologists conduct research? (p. 7)
  - Observe the behavior of employees on the job under well-controlled and systematic conditions
  - Record behavioral responses
  - Vary the conditions and measure resulting changes
  - They look, listen, measure, and record objectively and precisely, adhering to the principles of the scientific method.
4. Explain the contribution of Walter Dill Scott to I-O psychology. (p. 8)
  - The first to apply psychology to advertising, employee selection, and management.
  - Wrote *The Theory and Practice of Advertising* (1903).
  - Formed first consulting company in Industrial Psychology (1919)
5. Explain the contribution of Hugo Münsterberg to I-O psychology. (p. 8)
  - Wrote *The Psychology of Industrial Efficiency* (1913)
  - Conducted workplace research with the goal of improving worker efficiency
  - Used tests to measure skills and match workers to jobs
  - Wrongly accused of being a German spy during WWI
6. Identify: Army Alpha, Army Beta, and Personal Data Sheet. (p. 8)
  - Army Alpha - For recruits who could read and write
  - Army Beta - For recruits who could not read or speak English
  - Personal Data Sheet - To detect neurotic tendencies
7. What was the most significant finding of the Hawthorne Studies? (p. 9)
 

Social and psychological factors in the work environment were of potentially greater importance than physical factors.

8. Specify some of the major Organizational issues (the *O* side of I-O) addressed by I-O psychology since WWII. (p. 9)
- Human relations
  - Leadership
  - Motivation
  - Job satisfaction
  - Organizational structure and climate
  - Decision making
9. List the contemporary challenges for I-O psychology. (pp. 10-15)
- Rapidly changing nature of work
  - Virtual workplace and workers
  - Worker involvement
  - Technological advances requiring new skills combined with widespread illiteracy
  - Increasing ethnic diversity in the work population
  - The globalization of the workplace
  - Generational differences in values
10. What are the most marketable skills of I-O psychologists? (p. 15)
- Psychological test and survey construction and validation
  - Human resources selection and placement
  - Performance appraisal
  - Fair employment practices
  - Employee training
11. Specify the problems faced by I-O psychologists. (p. 17-19)
- Fraudulent practitioners and quackery
  - Requirements for credentials, licensing, and certification
  - Clearly communicating ideas and recommendations to management
  - Worker resistance to new ideas
  - Balance between theoretical versus applied research

### **MULTIPLE CHOICE**

1. According to the Schultz and Schultz text, work \_\_\_\_\_.
- a. provides a sense of personal identity
  - b. defines your social status
  - c. contributes to your self-esteem
  - d. satisfies your needs to belong to a group
  - e. all of the above
- ANS: e (p. 3)
2. I-O psychology is best defined as \_\_\_\_\_.
- a. the scientific study of human behavior and mental processes
  - b. the application of principles of psychology to enhance business management
  - c. the application of the methods, facts, and principles of psychology to people at work
  - d. none of the above
- ANS: c (p. 7)

3. The Hawthorne Studies \_\_\_\_\_ .
  - a. increased the effectiveness of complex weapons during WWII
  - b. were conducted during the 20s and 30s
  - c. were a catalyst for the start of consumer psychology
  - d. were conducted at the Hawthorne Plant of General Motors
 ANS: b (p. 8-10)
  
4. The Hawthorne Studies \_\_\_\_\_ .
  - a. studied the effects of the physical work environment on worker efficiency
  - b. led to initiatives in the testing of recruits during WWI
  - c. found that the work environment was more important than social factors in worker performance
  - d. none of the above
 ANS: a (p. 9)
  
5. I-O psychologists conduct research \_\_\_\_\_ .
  - a. primarily in laboratories
  - b. by observing the behavior of employees on the job
  - c. using lab rats
  - d. primarily in libraries
 ANS: b (p. 7)
  
6. I-O psychologists study our behavior on the job by \_\_\_\_\_ .
  - a. observing and drawing inferences from overt behavior
  - b. speculating about our past experiences
  - c. using physiological recording devices
  - d. recording their emotional reactions to what we do
 ANS: a (p. 7)
  
7. The man who is credited with sparking the initial development of I-O psychology is \_\_\_\_\_ .
  - a. William Hawthorne
  - b. Walter Dill Scott
  - c. Hugo Münsterberg
  - d. John B. Watson
 ANS: b (p. 7)
  
8. Hugo Münsterberg \_\_\_\_\_ .
  - a. promoted the use of psychological tests to select employees
  - b. is considered to be the father of I-O psychology
  - c. was the first to apply psychology to advertising
  - d. designed the Personal Data Sheet during WWI
 ANS: a (p. 8)
  
9. Place the following in the correct sequence to best describe the process by which I-O psychologists do their work.
  - a. listen-measure-look-record
  - b. record-measure-look-listen
  - c. measure-record-listen-look
  - d. look-listen-measure-record
 ANS: d (p. 7)

10. In the Hawthorne Studies, after researchers eliminated previously added benefits such as improved lighting and rest periods, worker production \_\_\_\_\_.
- stayed the same
  - decreased
  - increased
  - increased only for men
- ANS: c (p. 9)
11. The major contribution by I-O psychologists during WWII was in the area of \_\_\_\_\_.
- leadership
  - motivation
  - satisfaction
  - engineering psychology
- ANS: d (p. 10)
12. The “organizational” side of I-O psychology includes \_\_\_\_\_.
- leadership
  - employee testing
  - advertising
  - equipment design
- ANS: a (p. 10)
13. To function efficiently and productively, virtual workplaces require which of the following?
- material that can be downloaded
  - databases that can be accessed remotely
  - means of tracking employees and their work assignments
  - all the above
- ANS: d (p. 11)
14. Which of the following are negative effects of using temporary workers?
- Relations between full-time workers and management deteriorate.
  - Loyalty of full-time workers toward the organization tends to decrease.
  - Management often holds full-time workers accountable for the work of temporary workers.
  - All the above.
- ANS: d (p. 11)
15. As many as \_\_\_\_\_ million Americans over the age of 17 are functionally illiterate.
- 12
  - 17
  - 25
  - 34
- ANS: c (p. 13)
16. When presented with the task of computing change due from a two-item restaurant bill, no more than \_\_\_\_\_ of people in their 20’s could do so correctly.
- one-fifth
  - one-third
  - one-half
  - two-thirds
- ANS: b (p. 13)

17. In this early period of the 21<sup>st</sup> century, at least \_\_\_\_\_ of all new workers are persons of African, Asian, and Hispanic heritage and \_\_\_\_\_ of all new employees are women.
- one-third; one-third
  - one-half; one-third
  - one-half; one-half
  - one-third; one-half
- ANS: d (p. 13)
18. In the early years of the 21<sup>st</sup> century, what proportion of all new employees are women?
- about a third
  - less than half
  - about half
  - more than half
- ANS: c (p. 13)
19. “Baby Boomers,” the largest of recent generations, were born between the years:
- 1922-1945
  - 1946-1964
  - 1965-1979
  - 1980-2000
- ANS: b (p. 14)
20. A study by Coy (2004) at Harvard University and MIT found that the jobs most likely to be exported were \_\_\_\_\_.
- technological jobs
  - jobs that could be “routinized”
  - costly jobs
  - unionized jobs
- ANS: b (p. 14 Newsbreak)
21. According to Zaslow (2007), members of \_\_\_\_\_ are more self-centered and require more constant adulation, feedback, and recognition from their bosses.
- the Silent Generation
  - Baby Boomers
  - Gen X
  - Gen Y
- ANS: d (p. 15)
22. The minimum degree requirement for an I-O psychologist is \_\_\_\_\_.
- an associate’s degree
  - a bachelor’s degree
  - a master’s degree
  - a Ph.D.
- ANS: c (p. 15)
23. Most psychology majors with 4-year degrees find employment in \_\_\_\_\_.
- private corporations
  - government agencies
  - education
  - run their own businesses
- ANS: a (p. 16)

24. In 2006, the median annual income for doctoral level I-O psychologists was \_\_\_\_\_.
- \$45,000
  - \$55,000
  - \$98,500
  - \$180,000
- ANS: c (p. 16)
25. Psychology majors with 4-year degrees find employment in all sectors of the economy. Of those in the corporate sector, most are in which sector?
- managerial positions
  - sales
  - human resources
  - training
- ANS: a (p. 16 Newsbreak)
26. Which of the following is not a difficulty faced by I-O psychology?
- fraudulent practitioners
  - credentials and certification
  - communication with management
  - resistance to new ideas
  - all are difficulties faced by I-O psychology
- ANS: e (pp. 17-19)
27. Many human resource managers do not read the published literature in I-O psychology. Why?
- too technical
  - too difficult to understand
  - impractical and irrelevant
  - all of the above
- ANS: d (p. 19)
28. The conflict between research and application arises because \_\_\_\_\_.
- organizations often need immediate answers
  - production schedules cannot wait
  - managers face time constraints
  - all of the above
- ANS: d (pp. 19-20)
29. The value of the applicability of results from a laboratory study conducted by I-O psychologists depends on \_\_\_\_\_.
- the use of college students as subjects
  - the similarity between the situations in which they were obtained and the present situation
  - the use of workers as subjects
  - the amount of control available to the psychologist
- ANS: b (p. 20)
30. Organizational psychology is concerned with which of the following?
- vocational training
  - advertising
  - policy and structure
  - turnover
- ANS: c (p. 21)

31. Engineering psychology tries to \_\_\_\_\_.

- a. make machines more productive
- b. make machine operation foolproof
- c. find the best fit between person and machine
- d. select the best operators

ANS: c (p. 21)

32. The majority of accidents in industry are caused by \_\_\_\_\_.

- a. faulty machinery
- b. human error
- c. poor planning
- d. poor oversight

ANS: b (p. 21)

33. Which area of I-O psychology is most concerned with defining the markets for consumer goods?

- a. personnel psychology
- b. organizational psychology
- c. consumer psychology
- d. engineering psychology

ANS: c (p. 21)

# CHAPTER 2

## Techniques, Tools, and Tactics

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### LEARNING OBJECTIVES

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After reading and studying Chapter 2, students should be able to:

- Understand the requirements, limitations, and methods of psychological research.
- Explain the experimental method, how to design an experiment, and how to select participants in research.
- Explain the use of naturalistic observation, polls, and surveys to collect data.
- Describe how to construct a representative sample.
- Understand the basic concepts in descriptive statistics, inferential statistics, and meta-analysis.

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### LECTURE OUTLINE

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#### Why Study Research Methods?

You will probably have to deal with the findings of I-O psychologists

To use their advice you must understand how they studied the problems and arrived at their conclusions

The goal of this chapter is to acquaint you with the requirements, limitations, and methods of the scientific approach

#### Psychological Research

Objective observation

Base conclusions on objective evidence

Control

Possible influences on outcomes should be identified and measured

Duplication and verification

Replication of earlier studies

#### Research Limitations

Not all behavior can be studied

Observing behavior can change it

The Hawthorne effect

Artificial settings

College students as subjects

#### Research Methods

Experiments

Naturalistic observations

Polls and surveys

Web-based research

## **The Experimental Method**

The scientific way to determine the effect or influence of a variable on the subjects performance or behavior

*Independent variable*

The stimulus variable that is manipulated to determine its effect on the subjects behavior

*Dependent variable*

The resulting behavior of the subjects, which depends on the manipulation of the independent variable

## **Designing an Experiment: Effects of Lighting on Productivity**

Independent variable

Lighting

Dependent variable

Production rate

Element of control

*Experimental group* – exposed to the independent variable

*Control group* – not exposed to the independent variable, but similar in every other way

## **Selecting Participants**

Control group and experimental group must be as similar as possible

*Random group design*

Subjects assigned at random to experimental and control groups

*Matched group design*

Subjects in one group are matched with subjects in the other group on characteristics that could affect their performance

Desirable, but costly and time consuming

## **Effect of Training on Turnover & Productivity**

Subjects -208 employees in lingerie factory

Dependent variables - Turnover and productivity

Independent variable - Level of training

Group 1: 1-day of training (control)

Group 2: 2-days in training facility

Group 3: 3-days in training facility

Group 4: 3-days mixed training (facility & OJT)

Results

Turnover was lowest in Group 3, but so was productivity

Turnover was almost as low in Group 4, and productivity was nearly as high as in the control group

### **Naturalistic Observation**

Observation of behavior in natural setting without experimental manipulation of independent variable

Avoids artificiality – observed behaviors are typical of what naturally happens

However, without manipulations of IVs, it is difficult to conclude what brought about change

The observation cannot be repeated

Observer effects

### **Naturalistic Observation of Store Clerks**

Subjects

1,319 clerks in 576 convenience stores

Observations were made on levels of courtesy, which were then related to sales

Findings

the higher the incidence of courteous behaviors, the lower the sales

the busier the store, the less time the clerk had to exhibit courteous behaviors

### **Surveys and Opinion Polls**

Survey research method relies on interviews, behavioral observations, and questionnaires to sample what people say

Focus is not on what people do, but what they say they do

### **The Problems with Surveys**

Difficult to measure precisely our personal opinions and attitudes

Some people deliberately lie

Socially or politically correct response

Give an opinion on the subject even if they don't have one

People more likely to be honest when in private

Difficult to find people to respond

Phrasing of the question often influences the response

### **Ways to Collect Survey Data**

Personal interviews

Paper and Pencil Questionnaires

Web-based surveys

Most frequently used approach to employee polling

More reliable than telephone surveys

Subject to "ballot stuffing"

Telephone surveys

Problems arising from increased cell phone use

## **Basic Types of Survey Questions**

### *Open-end*

Respondents state their views in their own words

### *Fixed-alternative*

Respondents must limit their answers to the choices presented

Simplifies the process

May not completely reflect respondents range of opinion

It's a good idea to pretest the questions on a small sample

## **Methods for Constructing a Representative Sample**

### Probability sampling

Each person in the population has a known probability of being included in the sample

### Quota sampling

Because the sample must reflect the proportions of the larger population, quotas are established for categories such as age, gender, and ethnic origin

## **Web-Based Research**

### Advantages

Can be conducted 24/7

Faster, less costly

Availability of larger, more diverse pool of participants

Direct data entry reduces coding

### Disadvantages

Impossible to assess honesty on demographics

Range restriction – more educated, affluent people have computer access

Lower response and higher drop-out rates

<http://psych.hanover.edu/research/exponnet.html>

## **Methods of Data Analysis**

### Descriptive statistics

Ways of describing research data in a concise, meaningful manner

### Inferential statistics

Used to compare performance levels of the experimental group and the control group

### Meta-analysis

The large scale reanalysis and averaging of the results of previous research studies

## Presentation of Descriptive Statistics

Graphs

Measures of central tendency

*Mean*

*Median*

*Mode*

Measures of variability

*Standard deviation*

*Correlation coefficient*

## Measures of Central Tendency

*Mean*

Arithmetic average

*Median*

The score at the midpoint of a statistical distribution

*Mode*

The most frequently obtained score in the distribution of data

## Measures of Variability

*Standard Deviation (SD)*

It is a precise distance along the distribution's baseline

Using the SD, we can determine the percentage of scores that fall above or below any particular raw score

*Correlation*

The relationship between two variables

strength of relationship

direction of relationship

## Sample Distributions

*Normal Distribution*

Bell-shaped with most scores falling toward the middle with few at high and low extremes

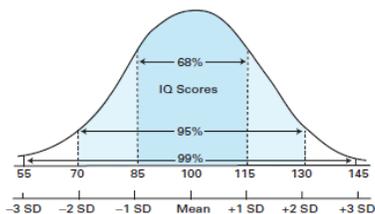
Mean, median and mode are equal

*Skewed Distribution*

Asymmetrical with more scores falling closer to high or low extremes

Median is most useful measure of central tendency because it is less affected by extreme scores

## The Normal Distribution of IQ



## Inferential Statistics

Methods for analyzing data that express relationships (e.g., differences between groups) in terms of probabilities

### *Statistical significance*

The level of confidence we have in the results of an experiment based on probability values

### *Probability*

The idea that a difference between the means of experimental and control groups could have occurred by chance

If  $p=.01$ , a difference would occur by chance only 1 time out of 100.

## Meta-Analysis

The large scale reanalysis of the results of previous studies

The average effect size of multiple studies weighted by sample size

Helps to determine overall trends

Used to reach more objective conclusions where a large body of research exists

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## KEY TERMS (p. 47)

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**Control group** – in an experiment, this is the group of research participants that is not exposed to the independent variable. (p. 28)

**Correlation** – the relationship between two variables. The strength and direction of the relationship is expressed by the correlation coefficient. (p. 44)

**Dependent variable** – in an experiment, this is the resulting behavior of the subjects, which depends on the manipulation of the independent variable. (p. 27)

**Descriptive statistics** – ways of describing or representing research data in a concise, meaningful manner. (p. 40)

**Experimental group** – in an experiment, this is the group of research participants that is exposed to the independent variable. (p. 28)

**Experimental method** – the scientific way to determine the effect or influence of a variable on the subjects' performance or behavior. (p. 27)

**Fixed-alternative questions** – survey questions to which respondents limit their answers to the choices or alternatives presented. They are similar to multiple-choice questions on college exams. (p. 37)

**Frequency distribution** – a graphic representation of raw data that shows the number of times each score occurs. (p. 40)

**Independent variable** – in an experiment, this is the stimulus variable that is manipulated to determine its effect on the subjects' behavior. (p. 27)

**Inferential statistics** – methods for analyzing research data that express relationships in terms of probabilities. (p. 45)

**Matched group design** – a method for ensuring similarity between experimental and control groups that matches subjects in both groups on characteristics, such as age, job experience, and intelligence, that could affect the dependent variable. (p. 28)

**Mean** – the arithmetic average; a way of describing the central tendency of a distribution of data. (p. 40)

**Median** – the score at the midpoint of a statistical distribution; half the scores fall below the median, and half above. (p. 41)

**Meta-analysis** – the large scale reanalysis of the results of previous research studies. (p. 45)

**Mode** – the most frequently obtained score in a distribution of data. (p. 42)

**Naturalistic observation** – the scientific observation of behavior in its natural setting, without any experimental manipulation of the independent variable. (p. 30)

**Normal distribution** – a bell-shaped distribution of data in which most scores fall near the center and few fall at the extreme low and high ends. (p. 42)

**Open-end questions** – survey questions to which respondents state their views in their own words. They are similar to essay questions on college exams. (p. 37)

**Probability** – the idea that the differences between the means of experimental and control groups could have occurred by chance. (p. 45)

**Probability sampling** – a method for constructing a representative sample of a population for surveys or polls. Each person in the population has a known probability or chance of being included in the sample. (p. 38)

**Quota sampling** – a method for constructing a representative sample of a population for surveys or polls. Because the sample must reflect the proportions of the larger population, quotas are established for various categories such as age, gender, and ethnic origin. (p. 38)

**Random group design** – A method for ensuring similarity between experimental and control groups that assigns subjects at random to each condition. (p. 28)

**Scientific method** – A controlled, objective, and systematic approach to research. (p. 25)

**Skewed distribution** – an asymmetrical distribution of data with most scores at either the high or the low end. (p. 42)

**Standard deviation** – a measure of the variability of a distribution; the standard deviation is a precise distance along the distribution's baseline. (p. 43)

**Statistical significance** – the level of confidence we can have in the results of an experiment. Significance is based on the calculation of probability values. (p. 44)

**Survey research method** – interviews, behavioral observations, and questionnaires designed to sample what people say about their feelings or opinions, or how they say they will behave in a given situation. (p. 32)

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## WEB SITES

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- Psychological Research on the Net from Hanover College – <http://psych.hanover.edu/research/exponnet.html>
- Research Methods Division of the Academy of Management – <http://division.aomonline.org/rm/joomla/>

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## REVIEW QUESTIONS (pp. 47-48)

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1. Of what value to you is a knowledge of psychological research methods as you begin your working career? (p. 25)

There are a variety of answers to this question, many of which are outlined on page 25 of the text. The primary idea is that, in the course of dealing with problems or making decisions, managers may interact with I-O psychologists. Managers thus require a basic understanding of research methods to make appropriate use of the information presented to them by the I-O psychologist.

2. Describe three basic requirements of psychological research. (pp. 25-26)
  - Objective observation
  - Control
  - Duplication and verification

3. What is the Hawthorne Effect and how can it limit the results of psychological research? (p. 26)

#### Hawthorne Effect

“Sometimes employee behavior changes just because something new has been introduced into the workplace. This phenomenon was first observed during the Hawthorne experiments and has come to be called the Hawthorne effect. Recall from chapter 1 that one of the Hawthorne studies involved increasing the level of lighting in a work area. Production rose with each increase in illumination and then remained high even when the lighting level was reduced. It didn’t seem to matter whether the light was brighter or dimmer. It was the change— something new happening in the workplace—that affected worker productivity” (p. 26).

#### Limitations

“The psychologist conducting research must determine whether the differences observed in the behavior of the subjects result from the actual working conditions under study or if they arise from the novelty of the change itself, independent of working conditions” (p. 26).

4. Distinguish between dependent and independent variables, and between random group design and matched group design. (pp. 27-29)
- Dependent and independent variables (p. 27)
    - *Independent variable*: the stimulus variable that is manipulated to determine its effect on the subject’s behavior
    - *Dependent variable*: the resulting behavior of the subjects, which depends on the manipulation of the independent variable
  - Random group and matched group design (pp. 28-29)
    - Random group design: subjects assigned at random to experimental and control groups
    - Matched group design: subjects in one group are matched with subjects in the other group on characteristics that could affect their performance
      - desirable
      - costly and time consuming
5. In what ways do experimental groups differ from control groups? What is the purpose of having a control group in an experiment? (p. 28)
- Experimental groups and control groups
    - Experimental group: exposed to the independent variable
    - Control group: not exposed to the independent variable, but similar in every other way
  - The use control group allows the researcher to infer that any significant differences seen in the experimental group at the conclusion of the experiment are the result of changes in the independent variable.
6. How would you design an experiment to determine why experienced computer operators who had worked for the company five years suddenly begin making data-entry mistakes when their department was moved to a new workplace? (another example on pp. 28-29)

Example: Designing an Experiment regarding location and mistakes

- *Independent variable*
  - Location
- *Dependent variable*
  - Mistakes
- *Element of control*
  - Experimental group
    - Exposed to the independent variable (new location)
  - Control group
    - Not exposed to the independent variable (i.e., remain in old location), but similar in every other way

7. Describe advantages and limitations of the naturalistic observation method. (pp. 30-31)

Naturalistic observation – the scientific observation of behavior in its natural setting without any experimental manipulation of the independent variable

- Advantages
  - Behaviors being observed are typical of what occurs daily
  - Findings can be more readily generalized and applied
- Limitations
  - Without control of the independent variable, it's difficult to conclude with assurance what caused any changes
  - Observation cannot be repeated

8. What are some of the uses of surveys and public opinion polls? Discuss some of the problems that can limit their usefulness. (pp. 32-33)

- Uses
  - Ascertain what factors contribute to job satisfaction and morale
  - Gather information on work-related issues
  - Assess reactions to changes in the workplace
  - Allow for employee participation in policy making
  - Uncover consumer preferences
  - Assess voter reaction to candidates and issues
- Problems with surveys
  - Difficult to measure precisely our personal opinions and attitudes
  - Some people deliberately lie
  - Socially or politically correct response
  - It's difficult to find people to respond
  - Phrasing of the question often influences the response

9. Describe four methods used to collect survey data. (pp. 33-37)

- Personal interviews
  - higher response rates than other methods; interviewers can clarify questions; some people are uncomfortable with personal interviews, and not all people are equally accessible
- Questionnaires
  - Most frequently used - and abused - method
- Paper or computer-assisted
- Web-based
  - there are age and cultural differences in preference
  - often employees are questioned too frequently
  - there is concern over "ballot stuffing"
- Telephone surveys
  - Telephone response rates have plummeted over the last decade

10. If your job was to conduct a market survey of BMW car owners to find out what changes they wanted to see in new models, what survey research method would you use? Why?

Use a combination of means to collect data: focus groups to personal interviews of current owners; email surveys; telephonic; and web-based collection. Each method has its own strengths and blind spots. Offering incentives will increase the useful response rate. Focus groups allow for more in-depth and follow-up on questions. Random selection of customers is a must. Control for differences in type of car and geographic location.