

PSYCHOLOGY

THE FUNDAMENTALS OF
HUMAN ADJUSTMENT •

BY NORMAN L. MUNN

BOWDOIN COLLEGE



Houghton Mifflin Company • BOSTON • NEW YORK
CHICAGO • DALLAS • ATLANTA • SAN FRANCISCO

TO MY WIFE AND SON
ANNA AND HENRY
I AFFECTIONATELY DEDICATE THIS BOOK

INTRODUCTION

IN THIS BOOK Doctor Munn gives an amazingly complete answer from the modern psychologist's point of view to the great question: What is man?

Every student who wishes to have a general education should study psychology because college-trained men or women today cannot afford not to have a knowledge of the factors which underlie their own mental lives and the mental processes of those about them. In the small American colleges of the years immediately following the Colonial period, it became traditional for the president of the institution to teach a required course for all students in what was sometimes called Intellectual Philosophy. In the old books used in these courses, one is struck by the fact that such basic psychological topics as memory, sensory perception, and feeling were treated at length. Today, of course, as a result of the use of the scientific method, the knowledge of these and related subjects has been greatly advanced, and the student who wishes a general education now more than ever cannot afford to omit psychology from his list of studies in college.

In addition to the basic and possibly unique contribution which psychology can make to a general education, the college study of psychology is of especial significance for students who are preparing themselves for medicine, law, teaching, the ministry, business, or any other field in which the professional man or woman is called upon to deal with other human beings. The present volume provides an excellent first book in psychology for one who wishes to use psychology in later professional life. The book also seems to the editor to provide a very good introduction to further technical study in scientific psychology.

The student who uses the present book as his introductory written guide to psychology will, I am sure, come to feel as he studies its pages that Doctor Munn is not a distant author, but rather a friendly counselor who never forgets to explain and illustrate new topics as they are taken up for consideration.

William James' two-volume *Principles of Psychology*, published in 1890, marked a turning point in books on psychology. Following the publication of this great work, every few years a new general book has been needed to bring together for the college and university student new factual and theoretical material which has been produced by scientific psychological research and investigation. Doctor Munn's book meets this need for modern psychology. He does not forget the importance of the biological and social sciences in the development of the scientific study of man's mental life.

Today, of course, Doctor Munn, as the writer of one of the really comprehensive new general books in psychology, has been faced with a much more difficult task than were textbook writers in this field a generation ago. He has had to select from what is now a vast accumulation of important experimental and theoretical work those items only which seem to be of greatest significance for the modern student who is to be introduced to psychology for the first time. In the editor's opinion, this task of selection and integration of present-day source materials has been performed by Doctor Munn with wisdom. The book also pro-

vides carefully prepared references for reading and study which will help the student who is anxious to pursue further almost any topic in modern psychology.

Doctor Munn's previous contributions to experimental psychology and his other books in this field are favorably known by his professional colleagues. Besides special experimental papers, he has written books entitled *An Introduction to Animal Psychology* and *Psychological Development*. In these earlier and somewhat more technical volumes he has shown himself to be an author who can avoid the error of merely encyclopedic writing while he presents relevant facts and theories in a clear and comprehensive way.

Psychology: The Fundamentals of Human Adjustment is both a serious addition to the professional literature of general scientific psychology and a guide for the new student in this field. It has been prepared by an able psychologist who is also an experienced college teacher.

LEONARD CARMICHAEL

TUFTS COLLEGE

PREFACE

MY REASON for writing this book is one which many of my colleagues in the teaching profession can understand, and with which they will perhaps sympathize. Few of us can teach the introductory course for a number of years without feeling that he could organize its topics into a more logical sequence, choose apter illustrations, find more interesting examples, and, in general, write a book which he would like better and which he hopes would be more appealing to instructors and students than any he has seen. In writing this book I have "written up" my own course and the accumulated notes and ideas of fifteen years of teaching. My interest in visual education prompted me also to give especial attention to illustrations, and I was fortunate in being able to include more illustrations, especially halftone reproductions of photographs, than are ordinarily found in beginning textbooks.

Like most recent textbooks in general psychology, this book is focused on human experience and behavior, with the contributions of several methods and systematic approaches used to paint a picture of man as the psychologist sees him. In writing the book I have undertaken to speak for psychology in answer to the student who wants to know what psychologists can tell him about himself and his fellows. My aim has been to present the problems, methods, facts, and principles of psychology in such a manner as to make the presentation interesting and challenging to the student, and at the same time to organize the material in a manner which the instructor will find "easy to teach."

The book has seven major divisions. Each opens with a brief introductory statement designed to give a general orientation to the chapters which follow. This initial orientation serves to define the wider concepts, to point out implications, and to explain the sequence of the chapters which follow. My purpose has been to make the chapters as brief as possible, and the divisions and the chapters within them are so arranged that an instructor who finds that he must shorten the course can do so without omitting an important topic. For example, in the division on learning, an instructor can omit the chapter on foundations, which is primarily theoretical, yet still have an adequate coverage of the topic of learning. Teachers of short courses will find that several chapters — common social motives, personal motives, feeling and emotion in everyday life, and others — can be assigned for reading, and be easily understood by the student without classroom presentation.

The *Students' Manual* designed to accompany this textbook has simple experiments and exercises which the student may do outside of class. It also has self-testing exercises, with scoring keys in the appendix, which will enable the student to test his assimilation of what he has read. Chapters omitted from classroom discussion can thus be tested by the student himself, and the instructor, if he wishes to do so, can examine his students on the chapters omitted as well as on those discussed in the classroom.

ACKNOWLEDGMENTS

I WISH to acknowledge several important contributions which others have made. First of all, there are the contributions of the many psychologists upon whose research I have drawn. Some of them have provided me with original illustrations, each of which is used with recognition of its source.

Anatomical drawings for which no source is indicated were the work of Mrs. W. M. Deacon. Most of the other original drawings were made by Phil London. Photographs without any reference as to source were taken in the Vanderbilt Laboratory of Psychology by Mr. B. S. Holden, of the George Peabody College for Teachers.

Helpful criticisms of the manuscript were contributed by several of my colleagues at Vanderbilt University. Doctor Sam Clark, of the Anatomy Department of the School of Medicine, was especially helpful, for his criticisms of Chapter 3 enabled me to avoid several pitfalls. Doctors Franklin Paschal, Meredith Crawford, and Eugene Bugg, of the Vanderbilt Psychology Department, each read and offered valuable comments on several chapters. Several of my students also gave helpful suggestions. Doctor Leonard Carmichael, as Editor of the Houghton Mifflin Psychology Series, read the entire manuscript. His chapter by chapter and page by page criticisms and suggestions have contributed much to whatever value the book may have as an introductory text.

Several students have, from time to time, served as typists and proof-readers. Among these, Pat Smith has proved especially helpful. Last but not least I wish to acknowledge the encouragement and help of my wife.

NORMAN L. MUNN

NASHVILLE, TENNESSEE

TO THE STUDENT

YOUR EXPERIENCE AND BEHAVIOR have much in common with the experience and behavior of other people. Even your problems of adjustment — the frustrations to be overcome, the aspirations to be achieved, the emotions to be controlled, the personal and interpersonal conflicts to be resolved — are shared by many others. So look upon this as a book about yourself — not as a treatise on some hypothetical human being. While studying it, continually ask yourself, "How does this apply to me?" Remember, too, that the study of psychology can give you insight into the conduct of other people. It should increase your understanding of why they behave as they do and, through this understanding, improve your ability to predict, perhaps even control, their behavior. Applications of psychology in the home, in the classroom, in the professions, in business, in industry, in warfare, and in the perpetuation of peace are focused primarily on the prediction and control of human conduct.

You will observe that this book is divided into seven main divisions, each of which has a brief introduction and from two to five chapters. Be sure to read the introductions whether or not they are assigned, for these deal with concepts and definitions which are taken for granted in the chapters which follow. Each chapter has a rather lengthy summary designed to bring to a sharper focus the material considered in the body of the chapter. It may be profitable for you to read the summary before you read the chapter, then reread it after reading the chapter. This is in accordance with the principle that ideas are most readily conveyed to others when you tell them what you are going to tell them, tell them, and then tell them what you have told them.

Students are often confused by a profusion of names and dates which serve to identify the author's sources. My policy has been to mention very few names in the body of the text, and then only the names of people who are historically important or especially identified with certain theories. Following the custom in many present-day textbooks, I have placed an inconspicuous number at the end of quotations or passages dealing with specific researches. If you wish to identify the person whose contribution is involved, turn to the end of the chapter and locate the number. There you will find the author and source, perhaps also a few notes concerning the study. Unless the instructor requires it, you should make no effort to memorize the names of these authors.

All major psychological terms have been defined when first used. Thus, if you come upon a word the meaning of which is not clear, locate this word in the index and turn to the page on which it was first mentioned. There, from an actual definition and from its context, you can get its meaning. A good dictionary to aid further in the development of your psychological vocabulary is Warren's *Dictionary of Psychology*. This will be found in almost any library.

Information on how to study, brief exercises and experiments to parallel each of the chapters of the textbook, and a large number of true-false, matching, and completion questions are to be found in the *Students' Manual* designed to accompany this book. The objective self-testing exercises should help you determine, after reading each chapter, how well you have grasped its contents. An appendix of the *Manual* contains scoring keys for these exercises.

COPYRIGHT, 1946
by Norman L. Munn

All rights reserved including the right to reproduce
this book or parts thereof in any form

The Riverside Press
Cambridge • Massachusetts
Printed in the U.S.A.

Part One

Page

SCOPE AND METHODS OF PSYCHOLOGY

1. Origin and Scope of Psychology

3

The Invisible Man. The Psyche. The Organism. Philosophy, Physiology, and Physics: Philosophy; physiology; physics. Psychology as a Science of Conscious Experience: The nature of science; analysis of consciousness; the functions of consciousness. The Expanding Scope of Scientific Psychology: Individual differences; memory; animals enter the psychological laboratory; psychology enters the nursery. Psychology and the Human Individual: Personality; the insane; the neurotic; the feeble-minded. Psychology and Social Phenomena: Influence of the social environment; group behavior. The Definition of Psychology. General Psychology. Summary.

2. How the Psychologist Works

20

General Orientation to Psychological Research: Theoretical and practical aims. Naturalistic Observation. Experimentation: External and internal stimuli; control of the organism; an illustrative experiment. The Clinical Procedure. Statistical Procedures. Summary.

Part Two

PSYCHOLOGICAL DEVELOPMENT

3. Origin and Psychological Significance of Response Systems

31

A Simple Response System. Specialization and Significance of Receptors: Visual receptors; other receptors. Specialized Effector Organs: Organs for locomotion; organs for manipulation. Elementary Nervous Systems: Neurons; the synapse; nerves; nerve-net and synaptic systems compared. The Reflex-Arc System. Evolution of Central Nervous Mechanisms: Elementary forms of centralization; evolution of the brain; the cerebrum; the cerebellum; the brain stem. The Human Cerebral Cortex: How functions of cortical regions were discovered. Sensory Functions of the Cortex: Somaesthetic sensitivity; visual sensitivity; auditory sensitivity. Motor Functions of the Cortex. Associative Functions: Frontal association areas. Summary.

4. From Conception to Maturity

57

Life Begins. Growth of the Nervous System: Origins of the nervous system; the reflex-arc system; growth of the brain. Growth of Receptors. Effector Development. Behavior of the Unborn: The first response; growth of the response repertoire. Birth and After: Sensitivity at birth; behavior of the newborn. Locomotion: The sequence of locomotor development; the mechanics of locomotion. Prehension. Language: Gestures; speech; writing. Summary.

5. Factors in Psychological Growth

Heredity: Chromosomes; genes; an example of inheritance. Environment. Heredity and Environment: The postnatal environment. Experiments with Heredity and Environment — Heredity Constant. Experiments with Heredity and Environment — Environment Constant. Maturation. Maturation of Behavior Experimentally Demonstrated: Experiments with animals. Maturation in Infants: Restriction of activity; restriction of activity and behavioral development in Hopi Indians; the development of Johnny and Jimmy; co-twin controls. Growth from Maturation and Activity Compared. Summary.

Part Three

LEARNING, REMEMBERING, AND THINKING

6. The Conditioned Response

91

Description of a Conditioned Response. Conditioning Techniques: The experiments on conditioned salivation; conditioned withdrawal; conditioning of other responses; conditioning involuntary responses; the direction of conditioning; classical and instrumental conditioning. Negative Conditioning. The Relation of Conditioned to Unconditioned Responses. Some Sequences and Time Relations. Generalization and Differentiation: Generalization; differentiation of stimuli. Elimination of Conditioned Responses: Experimental extinction; spontaneous recovery. Higher-Order Conditioning. The Significance of Conditioning in Human Life: Conditioning and acquisition of speech; acquiring attitudes; conditioning and other learning; some practical applications. Summary.

7. Acquiring Skill

104

Learning in Animals: Maze learning; the problem box; learning by imitating; use of tools. Human Learning: Human maze learning; problem boxes; complex motor skills. Verbal Skills: Learning to speak; memory experiments; substitution learning. Levels of Complexity in Habit Formation. Learning Curves: The physiological limit; plateaus. Transfer: Bilateral transfer; transfer in maze learning; transfer from one type of activity to another; transfer in verbal learning; bases of transfer; formal discipline; habit interference. Summary.

8. Foundations of Learning

127

The Role of Motivation: Rewards; rewards and learning in animals; rewards in human learning; punishment and reward; praise versus reproof; knowledge of results; rivalry and recognition; passive versus intentional learning. Some Conditions of Learning: Contiguity; exercise; effect; belonging; intensity; recency; primacy; a final word on conditions of learning. The Relative Economy of Different Learning Procedures: Distribution of effort; recitation; whole versus part learning. Sensory Contributions to Learning. Learning and the Brain: Amount of cortical tissue; location of lost tissue. Summary.

9. Remembering and Forgetting

149

Reproducing a Motor Performance. Relearning as Evidence of Memory. The Delayed Reaction: Delayed reaction in monkeys; delayed reaction in infants; recognition tests. Recalling: Recall after a single presentation — memory span; recall of paired associates; recalling narratives; reproduction of forms; testimony; the rôle of stimuli in recall. Recognizing. Retention and Original Learning: Distributed versus massed learning; recitation and retention; speed of learning and retention. Forgetting: Forgetting and the type of material learned; over-learning and forgetting; Why do we forget?; the effect of sleep; retroactive inhibition; emotion and forgetting. Memory Training. Summary.

10. Thinking

172

The Development of Reasoning: Combining past experiences; multiple choice; the double-alternation problem. The Reasoning Process: Inferences; direction. Language and Thought. Concepts: Development of concepts; experiments on concept formation; methods of training in concept formation; concept formation under conditions of greater complexity. Creative Thinking: Preparation; incubation; inspiration; verification or revision. Thinking and the Brain. Summary.

Part Four

MOTIVATION OF BEHAVIOR

11. Physiological Drives

199

Needs. Drives: Physiological drives; incentives and motives. Hunger: Hunger and blood chemistry; hunger drives; cafeteria feeding; food preferences; hunger in everyday life. Sex: The human sex drive. Thirst. Other Physiological Drives. The Relative Strength of Physiological Drives: Pitting one drive against another; the obstruction method. Physiological Drives, Reflexes, and Instincts: The relation between drives, reflexes, and instincts. The Sex Drive and Mating. Maternal Behavior. Man Is Primarily a Creature of Habit. Summary.

12. Common Social Motives

221

Gregariousness. Acquisitiveness. Self-Assertion. Pugnacity. Social Motives and Social Technique. Summary.

13. Personal Motives

231

Drug Addiction. Life Goals: Many different activities may have a common motivation; predominant motives and specific acts. Levels of Aspiration. Force of Habit. Unconscious Motivation: Post-hypnotic suggestion; unconscious basis of attitudes; slips of the tongue. Incentives and Effort: Monetary incentives; incentives in industry. Interests and Attitudes: Interests; attitudes. Summary.

14. Conflict

Sources of Conflict. Topological Representation of Conflict Situations. Some Reactions to Conflict: Trial and error; compensatory reactions; identification; phantasy; belittling others; blaming others; overcompensation; projecting; rationalizing; regression; repressing; abnormal reactions aroused by experimentally produced conflict. Conflict, "Will Power," and Initiation of Action: Conscience; initiation of action. Summary.

Part Five

FEELING AND EMOTION

15. Emotion

263

Development of Emotional Behavior: Emotion in the human newborn; growth of emotional behavior in children; maturation and learning in emotional development. Emotion as Conscious Experience. Emotion from the Standpoint of Behavior: Facial expression; postural reactions in emotion. Physiological Concomitants of Emotion: Investigating physiological changes in emotion; gastrointestinal functions; adrenal discharge in emotion; differentiating emotional from non-emotional states; Does each emotion have its own distinct physiological characteristics? Neural Mechanisms in Emotion: The autonomic nervous system; the cerebral cortex. Theories of Emotion: The James-Lange theory; the thalamic theory. Summary.

16. Feeling and Emotion in Everyday Life

284

Feeling in Everyday Life: Aesthetic preferences; annoyances. Judging Emotional Expressions. Lie-Detection. Emotion as a Factor in Disease. Controlling Emotion: Anger; fear; worry; some reactions to danger. Summary.

Part Six

KNOWING OUR WORLD

17. Attending

305

Some Aspects of Attending: Receptor adjustments; postural adjustment; muscle tension; central nervous adjustments; attending and clearness of perception. Fluctuations of Attention. Varieties of Attending. Determiners of Attention: External determiners; internal determiners. Attending and Perceiving. Summary.

18. Perceiving

318

Analysis of Perceiving: Receptor processes; symbolic processes; affective processes; analysis of perceiving summarized. Why We Perceive What We Perceive. Some Examples of Primitive Organization: Illusions; relational discrimination. Context. Past-Experience in Perceiving. Set in Perceiving. Reduced Cues. Perceptual Constancy. Perceiving Differences. Summary.

19. Vision

Page
334

Visual Stimulation: Chromatic vision; achromatic vision; the color solid. Some Phenomena of Color Vision: Retinal color mixture; other kinds of color mixture; color weakness and color blindness; color zones of the retina; after-images; simultaneous contrast. Some Structural and Functional Correlations: Cones; rods; visual acuity; retinal interaction; the pathway from eye to brain. Visual Space Perception: Physiological cues; psychological cues. Summary.

20. Hearing

358

Auditory Experience and Its Physical Correlates: The nature of sound waves; tone and noise; frequency of sound waves; pitch and frequency; the range of hearing; loudness and the amplitude of sound waves; timbre and the complexity of sound waves. Some Other Auditory Phenomena: Beats; combination tones; masking. Some Structural and Functional Correlates of Hearing: Auditory mechanisms; the Wever-Bray effect. Theories of Hearing: Place theory; frequency theory; the volley theory. Auditory Space Perception: Distance; direction; auditory perspective. Summary.

21. Our Other Senses

379

Smell: The question of primary odors; olfactory receptors; olfactory acuity; olfactory adaptation. Taste: The taste receptors. The Skin Senses: The search for structural correlates of cutaneous sensitivity; cutaneous adaptation. Cutaneous Space Perception: Localization; the two-point threshold. Kinesthesia. Static Sensitivity. Organic Sensitivity. Summary.

Part Seven

INDIVIDUAL DIFFERENCES

22. Introduction to Statistical Analysis of Individual Differences

397

The Frequency Distribution. Measures of Central Tendency. Measures of Variability. Correlation. Summary.

23. Intelligence

410

Beginning of Intelligence Tests: Early tests; development of the first "scale" of intelligence; the Revised Binet-Simon tests; the concept of mental age; the intelligence quotient. The Stanford-Binet Test: Contents of the test; how the test was standardized; how a child is tested; interpretation of Stanford-Binet I.Q.'s. How Constant Is the Relative Level of Test Performance?: Childhood precocity; consistent retardation; constancy in the I.Q.; changes in the I.Q. Heredity and Environment Again. The Value of Determining a Child's I.Q. Performance Tests of Intelligence: Performance tests covering the period from early childhood to maturity. Group Tests: Value of group tests; typical group tests illustrated; interpretation of scores from group tests. Growth of Intelligence. Factors in Intelligence. Summary.

24. Aptitudes	Page 441
<i>Aptitudes, Inborn Capacities, and Present Abilities. Aptitude and General Intelligence. Aptitude and Interests. Mechanical Aptitudes. Musical Aptitudes. Developing Tests of Aptitude for Particular Jobs. Vocational Guidance and Selection. Summary.</i>	
25. Personality	457
<i>Methods of Investigating Personality: Case history; rating; pencil-and-paper personality measuring devices; behavior tests; interviews; free association and dream analysis; projective methods. The Origins and Growth of Personality. The Biological Influence: Secretions from the endocrine glands; physique and temperament; the neural influence. The Situational Influence: Beginnings of response to social situations; home influences; the only child; other social situations. Normal and Abnormal Personality: The psychoneuroses; the psychoses. Summary.</i>	
INDEX OF NAMES	487
INDEX OF SUBJECTS	491

Part 1

SCOPE AND METHODS OF PSYCHOLOGY

IT IS DIFFICULT to give the student a meaningful definition of psychology until he is acquainted with certain aspects of its long and interesting history. This is due, in part, to the fact that the word *psychology*, which is derived from the Greek words *psyche* (soul or mind) and *logos* (discourse), no longer implies a study of the soul or of the mind. The difficulty in giving a meaningful definition is further increased by the fact that the scope of modern psychology is so broad that no simple definition could possibly do it justice. The brief historical survey in Chapter 1 will introduce the fields of psychology and lead to a definition of what psychology is today.

The scientific status of psychology depends on its methods — not on what it studies. Its methods are basically the same as those of the other natural sciences, but the nature of its subject matter introduces methodological problems which the other sciences do not have. Some of these problems, and the methods by which psychologists handle them, are considered in Chapter 2.

Chapter 1

Origin and Scope of Psychology

PSYCHOLOGY originated in the curiosity of our primitive ancestors about the nature of their experiences and activities. One thing which mystified them greatly was the fact that, while asleep, they seemed to wander forth, vanquish their enemies, pursue the maidens of their desire, and gather dainty morsels with which to appease their appetites. Mystifying also was the more or less frequent inability of a savage to control his behavior in the face of temptation. Why did he do what was forbidden and then feel fear, or perhaps shame? Why, when he wished to appear brave before his enemies, did his limbs tremble? Why did a man who was strong and active at one moment become weak or inactive at the next?

THE INVISIBLE MAN

Both our prehistoric ancestors and many primitive men who live today in savage tribes have given similar answers to these problems. They assume the existence of a man within man — an invisible man not subject to the confines of space and time. While the savage is asleep, this invisible man goes forth to fight, to woo, and to hunt, finding a convenient exit through the mouth or nostrils. It is this inner man who forces the savage to perform the forbidden act and then makes him afraid or ashamed. The same invisible man causes the savage's limbs to shake in the presence of his enemies. When the invisible man leaves and fails to return, the human body lies cold and still, incapable of further action. In the hope of averting such a

catastrophe, some primitive peoples fasten fish-hooks to the mouth and nostrils of a sick person, believing that, should his inner man try to escape to more comfortable quarters, it would be held fast.¹ *

Instead of answering these questions by assuming the existence of a man within man, other primitive peoples have at times claimed that the breath, or some other invisible substance, causes or controls man's behavior and experience.

THE PSYCHE

As early as 500 B.C. the Greeks had gone beyond the idea of a man within man. It was obvious to them that the invisible inner man, even assuming his existence, was no explanation at all, for one would still have to explain his behavior. The Greeks sought a more subtle explanatory principle. They did, however, retain the idea of an invisible something as the cause of behavior and experience. This they named the *psyche*, which means soul or mind. "Soul," as they used the term, had no more religious implication, however, than does the word *mind* today. The Christian concept of a soul developed much later, and will not be dealt with in this book, because its consideration belongs to technical treatises on religion.

Greek philosophers tried to discern the nature of the psyche by observing and describing behavior and experience — the "manifestations of the psyche." Some of their

* These numbers refer to citations and notes which appear at the end of the chapter.