Psychology

FIFTH EDITION

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Preface to the Fifth Edition

Without changing the general character of the book, the authors of this fifth edition have subjected it to a rather thorough revision. They have introduced new material when feasible, eliminated some old material that the beginning student will not seriously miss, simplified many passages with avoidance of superfluous technical terms and synonyms, and clarified the organization both of the separate chapters and of the book as a whole. The first part, on differential psychology, has been pruned of topics more logically belonging in the larger part devoted to general psychology, which begins with chapters on interaction with the environment and on development, along with a chapter on the nervous system, and proceeds to motives and emotions, observation and the senses, and finally learning, memory and thinking. The book will probably be found to become more difficult as it proceeds. An elementary treatment of learning is introduced fairly early, in the chapter on development. The chapter on imagination has disappeared but its essential content will be found in the chapter on thinking and in other chapters. The final chapter of the fourth edition, on personal applications, has also disappeared but much of its content is now incorporated into the chapter on choice, conflict and frustration.

A new feature is the analytical summary at the close of each chapter. All the important psychological terms used in the text

are defined in these summaries, and significant general principles are stated.

The references have been assembled chapter by chapter at the end of the book and provided with a separate index of names.

We are happy to recognize the important assistance received from several friends and colleagues. Professor Mary Rose Sheehan has given the proof her expert scrutiny and criticism. Mrs. Enrica Tunnell has made herself responsible for the completeness and accuracy of the references and indices. Lt. Commander Dean Farnsworth has provided the much-improved color chart. Professor G. Milton Smith, in preparing a Work Book to accompany our text, has read the proof and made valuable suggestions.

The new edition throughout, it should be stated, is the joint work of both authors.

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R.S.W. and D.G.M.

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CHAPTER ONE

The Aim and Method of Psychology

What's in a name? Words have a way of changing their meaning, and the names of our older sciences do not indicate clearly the nature of those sciences as they have developed in the course of the centuries. Mathematics, literally understood, includes all the sciences and all branches of learning. Physics is literally the science of growth or of nature in general. Chemistry was originally the art of extracting medicinal juices from plants. Psychology, also one of the older sciences, means literally the science of the "breath of life," and for many centuries it was defined as the science (or philosophy) of the soul. But neither that literal meaning nor that old definition gives a true picture of psychology today. At the beginning of the present century, when the psychologists of that day were making strenuous efforts to establish a science in the modern sense, one of their leaders was asked to formulate a definition of psychology. His reply, often quoted since then, was that psychology is "what psychologists are interested in," and that the only way to discover the nature of this science is to observe the work of psychologists and notice what they are trying to accomplish (*1*).[1]

[1] Italicized numbers in parentheses refer to the References on pages 639–658.

During World War II, even more than during the first one, psychologists had an opportunity to make a contribution toward meeting the national emergency. Their existing knowledge and methods could be applied to various military problems, and their war work was quite varied. One large problem, already worked at in industries before the war, was that of "fitting the man to the job and the job to the man." The problem has several angles. The man is tested and interviewed so as to discover his abilities and interests; and the job is analyzed, or rather many jobs are analyzed, to determine what abilities and interests are called for in each job. But the problem involves more than selecting the right man for the right job. The man must be trained for his new job of airplane pilot or radio-code operator, and psychologists developed efficient methods of training. Then too, the job itself often makes excessive demands on the operator's powers of seeing or hearing or on his skill of hand, and can be improved by careful study from the psychological point of view.

The psychologists were not concerned wholly with the abilities of a man; his emotional stamina and fitness for the severe stresses of warfare were also considered. The morale of a company, division or other group, and ways of building up morale and combatting disruptive propaganda and rumors—these were the problems committed to some of the psychologists. The rehabilitation of injured or emotionally maladjusted men, and the counseling of the veterans on their plans for education and civilian occupation, were another type of psychological work (*11*).

These various applications of psychology to the specific problems of war are of course different from peacetime applications, but in war and peace alike psychology has to do with the human factor. There is a human factor in industry, in government, in the building of a world organization for promoting peace and prosperity. The machines of industry and the machinery of government accomplish nothing without the will and skill of human operators. If we follow the psychologists into their peacetime laboratories, where they are occupied with funda-

mental research rather than practical applications, we still find them working on problems of human behavior. A science of human behavior—now in the making, though less far advanced than some other sciences—will eventually provide a sound basis for good management of human affairs both public and private.

Psychology studies the activities of the individual. The science of human behavior is actually a group of sciences. On one side we find physiology investigating the organs and cells that do the work of the organism, and on the other side we see the social sciences studying nations and groups of mankind. There is room for a middle science that shall focus its attention on the *individual.* That middle science is psychology. Psychology studies the individual's activities throughout his span of life, from his small beginnings before birth up through infancy, childhood and adolescence to maturity, and still further on through the declining years. During this life history he remains the same individual, and his behavior shows continuity along with many changes. Psychology compares child and adult, the normal and the abnormal, the human and the animal. It is interested in the differences between one individual and another, and still more interested, if possible, in the general laws of activity holding good even of very different individuals—laws, for example, of growth, learning, thinking and emotion. Psychology can be defined as the *science of the activities of the individual.*

The word "activity" is used here in a very broad sense. It includes not only motor activities like walking and speaking, but also cognitive (knowledge-getting) activities like seeing, hearing, remembering and thinking, and emotional activities like laughing and crying, and feeling happy or sad. These last may seem passive, yet they are activities, for they depend on the life of the organism. Any manifestation of life can be called an activity. No matter how passive an individual may seem to himself in watching a game or listening to music, he is really carrying on an activity. The only way to be completely inactive is to be dead.

Human activity as viewed by different sciences. Largely, though not exclusively, psychology is concerned with what we

ordinarily call "mental" activities such as learning, remembering, thinking, planning, observing, wishing, loving and hating. They are sometimes grouped under the main heads of knowing, feeling and doing. But any mental activity is at the same time a bodily activity. The brain is active in any such performance, and usually the muscles and the sense organs play a part. To discover how the various organs operate is the province of physiology. Physiology picks the organism to pieces, literally or figuratively, and tries to see what each organ contributes to the life of the whole. It asks what goes on in the eye during seeing and in the speech organs during talking. It asks how the muscles work the fingers in grasping an object; and how that enormously complicated organ, the brain, integrates the activities of the individual and enables him to deal effectively with the environment.

If, then, we wish to understand human behavior, does not physiology furnish all we want, so far as any knowledge is available? If the individual's activity can be analyzed into the activities of his organs, why should we study the individual as a whole? The answer is that physiology furnishes only part of what we need to know. The individual is a real unit. It is the individual that loves and hates, succeeds or fails. He has tasks to perform, problems to solve. He deals more or less effectively and happily with other persons and with things. There is a vast network of interaction between the individual, taken as a whole, and the world about him, and this interaction calls for scientific investigation. Psychology studies the individual's activities in relation to the environment.

The human individual, much of the time, is interacting with other individuals and taking part in group activity. The group can be taken as a unit and its activities described, as is done by sociology; or the individual can be taken as a unit and his behavior described in its relations with the other individuals; or, again, the activity of the individual can be analyzed physiologically. A football game, for example, could be reported as a struggle between two teams without any mention of the individual players. Team A, having the ball, first tries a certain

mass formation which advances the ball a yard, and next tries a certain open play which loses ground. Team A then forms for a kick, but Team B breaks through and captures the ball. And so on. The game could also be described as consisting of the actions of the individual players; to be complete, the description would have to tell what each player heard, saw and felt, what he attempted to do, what obstacles he encountered and how he came out of each play. It would make a very involved story. Theoretically the same game could be described in physiological terms, for certainly the muscles, lungs, heart and brain of every player are active throughout the game. The physiological description, if at all complete, would fill the Sunday newspaper and contain much valuable information, but would be disappointing to any reader who wanted to follow the game.

So we can have physiological, psychological and sociological pictures of human activity, each picture true and valuable. They are like maps of the same country drawn to different scales. One map shows much more detail, another gives a better idea of the general shape of the country. Human life can be charted in its broad social relations or in its internal organic details. Psychology, however, uses a medium scale such as brings out the activities and relations of the individual.

SCIENTIFIC METHOD IN PSYCHOLOGY

During its long history down to the middle of the nineteenth century, psychology was cultivated by able thinkers who did not realize their need of carefully observed facts. They relied on general impressions derived from past experience. They felt, as many persons do today, that having observed people all their lives they must know psychology pretty well, or at least must know all the necessary facts. When they came to discuss psychology with each other, however, they were often in disagreement and saw no way of settling the disputed questions. It became clear that psychology, like other sciences, must gather more facts in order to make any substantial progress (*6, 7*).

There was an anecdotal period when the need for concrete facts was recognized but no systematic investigations were undertaken. Anecdotes in some cases are true reports of actual behavior, but in other cases the facts were not accurately observed in the first place and have since been partly forgotten or even distorted in memory. Scientists find it necessary to sharpen their powers of observation by the use of instruments and by setting up definite questions of fact to be answered by observation; and they find it necessary also to record their observations on the spot and not trust to memory.

Anecdotes and general impressions derived from past experience are likely to give a one-sided view of the facts on any controversial question. Someone tells you he knows from his own experience that bad luck comes on the 13th of the month, for he has taken pains to notice and feels sure of his facts. But has he duly taken note of the *negative instances,* when good luck came on the 13th and bad luck on some other day, or did only the positive instances make any deep impression? If anyone thought it worth while to make a scientific study of the matter, he would keep a diary and note down each day his good and bad luck—taking care to use the same standards of good and bad luck throughout the investigation—and finally sum up the results over a long period of time. In this way the memory error, the error of one-sided selection of cases, and the error of too few cases would all be avoided.

The experimental method. Finally psychologists decided they must follow the lead of physics, chemistry and physiology and transform psychology into an experimental science. Whenever a process or activity is to be studied, experiment is the ideal means of getting the facts.

An experiment is sometimes described as a "question put to nature." A successful experiment is one that gets a clear answer from nature. The experimenter approaches nature with a question, and his skill lies in so putting the question as to obtain an answer. What is implied by the word "nature"? We speak of the "uniformity of nature," meaning that under the same conditions the same thing will happen, the same result be obtained. A