ENGLE

PSYCHOLOGY

PRINCIPLES AND APPLICATIONS

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FOREWORD

THE growing demand for instruction in psychology at high school and first-year college levels has increased the need for a textbook in this subject written specifically for a large group of students with interests and backgrounds that differ from those of students in the traditional beginning classes in psychology. To meet that need, the present work has been prepared by a teacher of psychology who taught the subject for a number of years in high schools and who has since been teaching it in college.

In this book the assumption has been made – conforming with actuality rather than with the precedent of some other textbooks – that the majority of students will take no further formal courses in psychology. The purpose has been to lay a broad foundation for further learning, whether formal or informal, through the development of a lasting, critical, and enjoyable interest in the subject as a whole. It has not been felt necessary to present technical details that could have value only to those students who might later specialize in the subject. Nevertheless, the scientific point of view has been emphasized and maintained. Account has been taken of the fact that throughout their lives students who may use this book will have – and will probably improve – many opportunities for studying and applying psychology; that their advanced "texts" will be magazine articles, radio programs, motion pictures, sermons, and lectures; that their psychological "laboratories" will be the homes, the businesses, the clubs, and the communities in which they will function as citizens.

Specific objectives in the presentation and study of psychology at the secondary school level, accepted in the preparation of this textbook and exemplified therein, include helping young persons to –

be more effective students.

distinguish between pseudoscientific and scientific material.

apply the principles of hygiene – and particularly mental hygiene – consistently and completely.

develop what is best in their personalities.
use leisure time worthily.
realize more fully their latent capacities.
select their life vocations wisely, that they may succeed in them.
be worthy members of their present homes and of the homes they will probably establish within a few years.
prepare effectively to undertake their responsibilities as citizens in a democracy.

It is not expected that in every course in which this book may be used mastery of all its content will be required of students. Material has been supplied in abundance on many topics, leaving the teacher latitude wherein to make selections in accordance with the needs of any particular group of students. The teacher may assign one chapter or part of a chapter for careful study and treat another chapter as collateral reading matter.

It is hoped that some students will become so interested in their introductory course in psychology that they will wish to continue the study at a more advanced level. Such individuals will find that the broad general introduction secured from a study of the present book will help them more than a limited and intensive secondary course could help them in selecting further courses; that it will leave them freer – when the time comes – to apply themselves to special advanced work.

Many experimental studies are quoted or summarized, but no attempt has been made, as is done in advanced textbooks, to indicate in footnotes or reference lists the sources of original data. It has been felt that for the students for whom this book is intended such source material would have slight practical value, if any. Moreover, the libraries available to most of these students do not have the files of journals or the technical books to use for such references; and, in any case, most material of that kind is too difficult for beginners in psychology to read with interest. The teacher can with more hope of profit refer students to carefully chosen articles from current popular journals and to selections from books available in the local city or school library. Some references are given in the Teacher's Manual which accompanies this textbook.

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CHAPTER 1

AN INTRODUCTION TO THE SCIENCE OF PSYCHOLOGY

PROBABLY as you begin your study of psychology you are asking, "What is psychology?" Maybe you have only hazy ideas about it; maybe you have some mistaken ideas. To many persons psychology suggests one thing or another that is somehow mysterious, as "mind reading," fortunetelling, head reading (phrenology), or command over the wills of others. But psychology has nothing to do with such things, except to expose the fallacies and impositions that are connected with them.

Psychology is a science; that is, it is a branch of "philosophy" in the broadest sense of that term, which has been defined as "the study and knowledge of the principles that cause, control, or explain facts and events." It is a science just as astronomy, physics, chemistry, and biology are sciences. Astronomy deals with the movement and with the composition of the heavenly bodies; physics, with matter and its activity; biology, with plant and animal life. Each of the many sciences has its own field. What, then, is the field of psychology? Of all the facts and events in our world and universe, which ones shall we consider and try to understand in our study of psychology?

THE FIELD OF PSYCHOLOGY

It is always difficult to define words, and yet exact definitions are extremely desirable in all scientific work. Perhaps the most accurate broad definition of psychology is this: "Psychology is the *systematic* investigation of the *behavior of organisms*." Let us consider the elements of that definition.

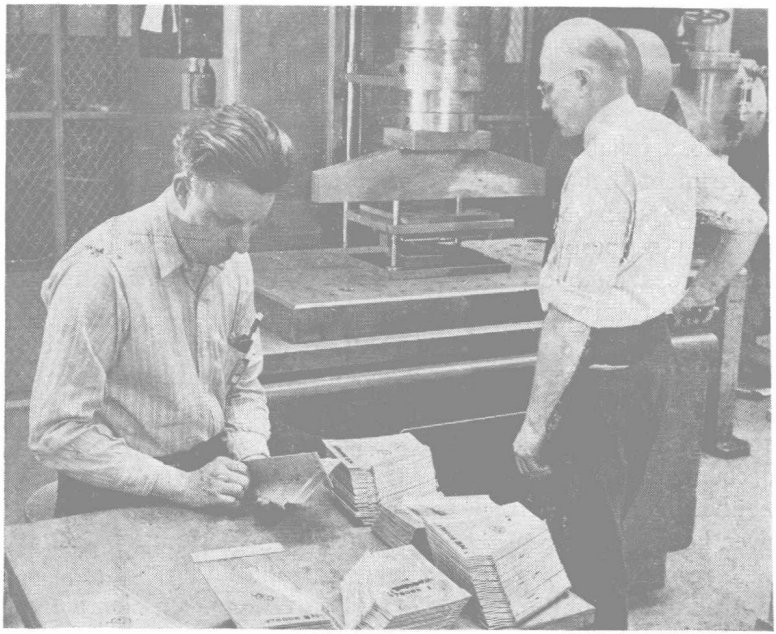
All science is *systematic.* When you go into the chemistry laboratory, you do not begin pouring the contents of one bottle into another without noting carefully the label on each and without knowing why you are pouring the two liquids together; you are systematic – scientific – in your investigation. Psychologists must, likewise, be systematic.

The word "behavior" implies activity. This activity may be *overt;* that is, open to view, as when a man lifts an object or walks around a room. Again, a person may sit for some time *thinking,* and we may be tempted to say that he is not active. But if delicate measuring instruments were to be attached to the thinker's body, we should find his thinking to be accompanied by slight physical movements. Thinking is activity. The activities of various glands and muscles are a part of behavior and therefore come within the field of psychological study.

Possibly you suspect that when a person is asleep he cannot be an object of interest to the psychologist because he is no longer engaged in activity – not even thinking activity. However, a sleeping person is active, his heart keeps on beating, he breathes, he digests food, he moves, he even thinks. We think in our sleep, probably most of the time, although we may not remember our thoughts. If upon awakening we do remember our thoughts, we say that we have been dreaming. Psychology, then, according to our definition, covers the sleeping state as well as the waking state of an organism.

An *organism* is any living being. Except in the one-celled, lowest forms it is a unified system of cells that is capable of continuing to live by itself or which has been capable of living by itself. Your finger is a unified system of cells – it is organic; yet it is not an organism, for it could not continue to live and keep its structure if it were to be severed from the rest of your body. In psychology we may take note of very simple animal forms, but we shall be concerned to study one organism and another only so long as they are capable of living and behaving by themselves.

Psychology is concerned primarily with the *activities, including thinking, of ourselves and our kind* as we go about the everyday work and play of our lives.



Chrysler Corporation

FIG. 2. The work of these men consists mostly in thinking, yet it is fatiguing. They are preparing precision guides, called *templates,* to be followed in the manufacture of automobile parts.

SCIENTIFIC METHOD IN PSYCHOLOGY

Caution against unscientific observations and conclusions. All of us know something of psychology without formal study, for we are interested in observing our fellow men; but much of our everyday observations is highly unscientific. We may happen to notice that the victim of an accident walked under a ladder the day before, or that the day of the accident was Friday the thirteenth. We may conclude that to walk under a ladder or to begin any work on Friday the thirteenth brings misfortune. Certainly this would be neither scientific observation nor scientific conclusion, for we made no check on how many persons walked under ladders or on how many began tasks on Friday the thirteenth and did not have bad luck.

Unreliable remembrances. Sometimes we try to get light on our present behavior and thoughts by thinking back to our childhood experiences. The study of child behavior is a feature, or phase, of psychology; but our remembrances of childhood do not furnish a reliable basis for such study. It has been found by experiment that remembrances are often quite inaccurate, and accuracy is absolutely necessary for scientific work.

Again, suppose we happen to see an automobile accident and later are summoned to give evidence in court. An attorney asks us to testify concerning what we saw and heard at the time of the accident; that is, he asks us to tell how human beings behaved under particular environmental conditions. We report, as best we can, what we saw and heard; but we may find that some other witness of good character gives a widely different account of what happened. Which story is correct? Probably neither is entirely correct, for scientific studies have shown that even honestly given testimony is likely to be very unsatisfactory, with respect both to completeness and to accuracy.

Anthropomorphism. To take an illustration of unscientific observation from another field, we may turn to subhuman behavior. We note the behavior of a dog begging for a bone. When he barks we say that he "speaks" for the bone; and when he buries it we imagine that he thinks to himself, "I am not hungry now, so I shall hide this until I am hungry; I shall put it in this hole so that the nosy pup next door will not get it." Such observations on our part are a manifestation of anthropomorphism; that is, the attribution of human characteristics to beings other than man. Our fairy stories often show this tendency, and sometimes we attribute thoughts even to inanimate objects. When we observe the behavior of a dog or any other animal in his environment, we are applying psychology; but when we casually attribute human characteristics to him, we are not being scientific. As we proceed with our study in this book we shall have many occasions to note popular beliefs based on unscientific observations.

Essential attitudes and procedures; freedom from prejudice. Just what do we mean when we say that we must be scientific in our study of individuals in their environment? In general,

we mean that we must bring the same attitudes and fundamental methods to our study that the physicist, the chemist, the astronomer, the biologist, or any other scientist brings to his special field of study.

One very important point to keep in mind is that we must always strive to approach our problems without prejudice. Suppose there is a child in our community who makes trouble for everyone – throws rocks through windows, lets the air out of tires when cars are parked in the street, steals whenever he can find a door unlocked. We have been the victims of some of his antisocial behavior, and now as psychologists we are asked to decide whether or not the child is feeble-minded. Unless we take special care to be scientific we may be so prejudiced that we shall not render an opinion based on our findings entirely, but in part on our prejudices.

Any scientific quest must be for something definite. If we go into a chemistry laboratory and begin to put chemicals together without special purpose – without knowing what to look for – we shall probably not learn much. Before we begin our study of people we shall have to know what to look for. If we inquire into the case of the child who made so much trouble for the community, we shall have to apply this principle. If we are interested in studying his general intelligence to determine whether or not he is feeble-minded, we shall have to look for those factors which enter into general intelligence and for the time being disregard other factors. And if we are studying his behavior in an attempt to discover why he is so maladjusted in his social life, we shall have to find out about his home life, about unfortunate experiences he may have had at school, and so forth.

Observations and records must be accurate. We shall have to be very accurate in our observation of people if we are to be scientific in our study of psychology. It is not enough to observe that a child is "bad"; we must record in what particular ways his behavior is socially undesirable. Perhaps we shall find it necessary to keep a record of how many times and under what circumstances he steals, is absent from school, or destroys property.

No matter how careful we are in our work, we are likely to make mistakes or to get incomplete data. If we are truly scientific, we shall welcome the criticisms and corrections of others. For this reason we shall have to report our techniques and results in detail, so that others may repeat our experiments and either verify or correct them.

Experimental techniques. Suppose that we were to study what effect being an only child has upon personality. We should get data from a group of "only" children and compare those data with similar data secured from children who had brothers or sisters. Another psychologist might carry out the same experiment, using the same technique as ours, and possibly he would get somewhat different results. We might repeat our own experiment and get slightly different results from those obtained in our first study. If we are truly scientific in our work we shall neither disregard another person's work nor ignore our first results, but we shall study the differences in data and try to find what has caused them.

Perhaps we shall decide to carry out a new experiment, holding constant those factors that we permitted to exist as variables before. To illustrate this bit of scientific technique, suppose that in our first experiment we selected a large number of children who were "only" children and compared them with a large number of children who had brothers or sisters. Suppose we attempted to measure personality for both groups by means of a personality inventory. (We shall discuss personality inventories in Chapter III.) Can we be sure that whatever differences appear are accounted for by the fact that one group consists of "only" children and the other does not? Perhaps some of the differences we find are owing to sex rather than to the number of children in the family. We might hold this factor constant by comparing boys with boys and girls with girls.

Perhaps some of the differences we find are owing to the social conditions of the homes and communities from which the children come. We could take care, in another inquiry, that the children were all from approximately the same kinds of homes. For example, it would be unscientific to compare children from homes of wealth with children from homes of poverty, without

at least recognizing that family means might influence personality adjustment. This factor might have no influence on our results, but in our effort to be scientific we should have to compare children among whom family means were nearly the same for all. We should select children who were alike in as many ways as possible, except that one group would consist of "only" children and the other group would consist of children with brothers or sisters.

Mathematical standards; precision. One method of science which American psychologists especially have insisted upon is the use of mathematical – statistical – devices. Most sciences, including psychology, use mathematics a great deal, for they are concerned with quantities and their measurement. In a study of eyesight, for example, we shall not be content to say that John can see much better than Henry; it will be necessary to say just how much better. We shall have to be able to rate John's eyesight and Henry's according to some well-established and widely accepted standard. And that standard will necessarily be based on scientific findings concerning the eyesight of people in general. Such findings are based on measurements, mathematically compiled, of the eyesight of great numbers of persons.

In much of their work psychologists place emphasis on having available for comparison the results, statistically arrived at and expressed, of the investigation of large numbers of cases.

We must be as precise as possible in making scientific measurements of any phenomena. Suppose we observe that under excitement a person's breathing becomes unusual, that he takes very long or short or uneven breaths. Our unaided observation gives us some idea of the physiological conditions, but we can increase the accuracy of observation by means of instruments. There is a device we can place around a person's chest and connect with a recording instrument which automatically makes a graph of a person's mode of breathing. Many times the psychologist uses instruments to increase the accuracy of his observations.

The law of parsimony. After any scientist has arranged his experiment and collected his data as carefully and scientifically

as possible, he must interpret it. There is a rule followed in all sciences which is called "the law of parsimony or economy." This rule states that of several explanations or interpretations equally good in other respects, science favors the one that is most simple. To illustrate: Suppose we met a child on the street and stopped to give him a friendly pat on the head, but as we raised our hand he ducked and ran away screaming. How should we explain this behavior? We might say that the child's "conscience" was hurting him and that he was afraid of being slapped; so he ran away. A more simple explanation might be that in his past experiences, whenever an adult near him had raised a hand, he had received a painful blow and had run away to prevent more blows; that is, he had learned to expect a blow whenever he saw a hand go up. This simple explanation would be more acceptable to science than the explanation of a guilty conscience. We shall always have to be careful to accept the simplest, and so the most scientific, adequate explanation.

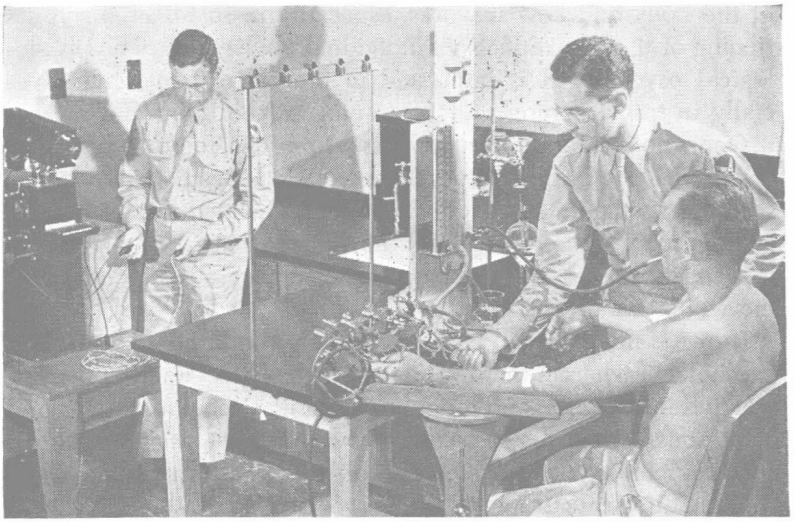
Special Fields of Psychology

In this book we shall attempt to secure a general view of the subject of psychology. We cannot, of course, go into great detail in any one branch of the subject; and it is to be hoped that after you have completed this first course you will continue to read in magazines and new books about phases of psychology that especially interest you. Possibly you will wish to continue with your study of psychology by taking courses in specific branches of the subject. Whether or not you take formal courses in psychology, you will be studying people as long as you live and it will be well for you to try to be as scientific as possible in your observations.

Business and professions. One interesting field of psychology has to do with business. In this field one studies the various applications of principles of general psychology as they are especially related to business problems. Attention is given to such problems as these: What human interests should be taken into consideration in the preparation of this or that advertisement? What principles of psychology can be applied to selling in order

to make it more effective? What system of paying employees produces most efficient work? How can employees be helped to enjoy their work?

There is great need for the application of psychological principles in medicine. Some physicians specialize in psychology and are called "psychiatrists." It is well to note the difference between a psychiatrist and a psychologist. Both are interested in helping their fellow men by applying psychology, and both have specialized in the study of the subject; but the psychiatrist has had regular medical training in addition to his special training in psychology, while the psychologist has not necessarily had medical training but may have had more training in psychology itself. The psychiatrist and the psychologist are both interested in patients who have so-called "nervous diseases," like hysteria and "nervous breakdowns." Also, both are concerned



U. S. Army Air Forces

FIG. 3. Pilots flying at high altitudes or making swift descents often experience "black-out," a phenomenon of interest to physicians and to psychologists as well. Here a flight surgeon, doing research work on black-out, is taking an aviator's blood pressure. The man at the left is making a motion-picture record of the changes indicated by the instruments.