

The Century Education Series

EDUCATIONAL PSYCHOLOGY

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PREFACE

Since the appearance of "Psychology and the School," I have had a number of requests that I should prepare a textbook of educational psychology, which should treat the subject *matter more comprehensively* and be designed for more mature students. The present volume is the outcome of my attempt to meet these requests, and also to prepare a text suitable for use in my own classes. Some of the material of "Psychology and the School," in particular the chapters on the elementary school subjects and the one on reflective thinking, have been incorporated into the newer book. These chapters have, however, been revised and extended, and both the plans of organization and the treatments of material of the two books are quite different.

I am under much obligation to my colleague Dr. O. F. Weber for his reading of the manuscript and for valuable suggestions. My other numerous obligations are acknowledged in the body of the text.

E. H. CAMERON.

Urbana, Illinois.

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CHAPTER I

INTRODUCTION

Educational psychology defined.—Psychology is the science that describes conscious processes and their relationship to the behavior of man and other animals. Educational psychology selects from the field of general psychology those facts and principles which are of special significance to education. Educational psychology is not, and can not be a distinct and separate science from psychology. The very act of living involves learning, and learning is the process of education, whether it takes place in school or outside of school. There are no distinctive mental processes that are utilized only in connection with schoolroom learning. Hence, educational psychology differs from general psychology only in the selection and emphasis of its data, and in their application to problems of *educational method and organization*.

Should the teacher know psychology?—Teaching, like medicine and other professions, is an art. Success in teaching as in all arts depends on (1) native aptitude, (2) experience, and (3) correct understanding of the **materials dealt with**. In the case of the physi-

cian the world has come to accept the view that certain knowledge is necessary as a preparation. Psychology plays a similar rôle in the preparation of teachers to that which physiology and anatomy play in preparing the physician for the practice of medicine.

Psychology can not definitely determine methods of education.—William James, in addressing teachers over twenty years ago, said: "You make a great, a very great mistake if you think that psychology, being the science of the mind's laws, is something from which you can deduce definite programs and schemes and methods of instruction for immediate schoolroom use. Psychology is a science, and teaching is an art; and sciences never generate arts directly out of themselves. An intermediary inventive mind must make the application by using its originality."¹

Since James made this statement many psychological facts have been discovered that have brought psychology closer in its applications to actual school work. The number of investigations bearing directly on education has increased very greatly, but James' statement remains and must always remain substantially correct. Psychology may frequently indicate that certain methods are incorrect because opposed to its principles, but it can seldom definitely determine that a single method is the only correct one. It is commonly agreed that no facts that have been discovered by application of measurement to psychology are of more importance for education than the great differences which have been found to exist between in-

¹ James, William. *Talks to Teachers on Psychology*. Henry Holt & Co., New York, 1904. p. 7.

dividuals in the various mental traits that have been measured. Mainly as a result of these discoveries, various methods of teaching and organization have been suggested and actually tried out in the schools. But the determination of what method of caring for individual differences is most effective or of greatest value can not be made by the methods of educational psychology alone. Even though the relative efficiency of different methods for certain purposes may be put to the test of experiment, differences of opinion which can not be settled by measurement will arise concerning the relative value of these various purposes.

Differences in underlying interests of psychologists.—Psychologists are not in agreement as to what constitutes the proper scope and purpose of psychology. Some are of the opinion that psychology, as the name implies (science of mind), should confine itself strictly to the study of conscious processes “as such.” Notwithstanding the obviously close and intimate character of the relationship between bodily and conscious processes, these psychologists prefer to confine their interests to the latter as revealed by the method of introspection. Others who are impressed by the difficulties of the introspective method, and who believe that it is possible to explain man’s behavior fully by reference to what takes place in the nervous system, wish to ignore conscious processes completely in their study of psychology. According to still another point of view a more fruitful method is to ignore none of the facts as we find them, but to use them all in so far as possible in the endeavor to explain human behavior. This method, which is the one adopted here,

emphasizes with the introspectionists the importance of conscious processes, but at the same time regards the mechanisms of the body as intimately and inseparably associated with the mind's functions.

Psychology as a biological science.—Psychology, like biology, may adopt as its fundamental conception for the understanding of man the view that man, like all other living organisms, is subject to a constantly recurring series of changes due to the necessity of adaptation to environment. All animals, including man, are provided with structures and functions that make it possible for them to lead a more or less independent existence. If the environment is not suitable to their needs, they may react in some cases by moving away from the unfavorable surroundings; or in other cases by rearranging or refashioning the environment as, for example, when man builds dwellings.

Man can be best understood as acting in accordance with the same principles of action as other living organisms. Biology calls attention to the many resemblances between the bodily structures and functions of human beings and those of the lower animals. Study of the behavior of the lower animals also shows that they are governed by the same general principles of action as man. But while man's kinship with the lower animals can not be questioned, and the significance of his life activities can not be understood unless this relationship is taken into account, it is a grave mistake to minimize the importance of the great gulf between man's nature and that of the most highly developed of the lower animals. In no respect are these differences more marked than in the various forms of learn-

ing that result in the changes which we call education. It is by means of learning that man makes his most significant adaptations to his environment. The animals, even those far down in the scale, unquestionably learn, that is, change their original modes of behavior; but their learning is simple and limited in extent. A more detailed account of the way in which man and the lower animals make their adaptive responses will serve to emphasize this contrast, and to show the great importance of education as a process of adaptation.

The bodily mechanisms for producing action.—There are three biological functions, which all animals possess, that are primarily responsible for the mutual action and reaction between animal organisms and their environment—irritability (sensitivity), conductivity, and contractility. While all these functions are performed by the same cell in the lowest forms of life (the unicellular animals), in the case of all forms higher than these the cells are more specialized. Those cells that are specialized to perform the function of irritability are situated, for the most part, at or near the surface of the animal's body. In higher animals they take the form of special sense organs and are differentiated for special kinds of environmental changes—contact (touch), ether vibrations (vision), air vibrations (hearing), and so on. Irritability is, then, the primary function by means of which environmental changes affect living organisms. But the organism thus affected is not merely changed—it reacts. The reaction is due to the functioning of the contractile cells which, taken together, constitute the muscular system in the case of higher forms of animal