PSYCHOLOGY IN EDUCATION

BY

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HAROLD BENJAMIN, CONSULTING EDITOR

PSYCHOLOGY IN EDUCATION

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The old and the new school. (*Upper figure, courtesy of the Gallery of Fine Arts, Yale University. Lower picture from Let's Go to School by Horrall, et al.*)

PREFACE

The major objective of the writer was to produce a volume that would contain and interpret the fundamental psychological facts, principles, and theories applying to education. Because the education of pupils is much more than the learning of subject matter, the contents of this text concerns itself with the fuller problem of pupil adjustment. Methods of effective learning demand the serious and devoted attention of the educational psychologist, but so also do the problems of growth, emotional reactions, behavior, and personality of pupils, capacity to learn, measuring and marking achievement, and the extent that pupils' abilities and characteristics can be and are determined by hereditary and environmental forces.

Considerable emphasis is placed on growth, development, and adjustment, as evidenced by the chapters and sections on physical growth, social growth, mental growth, and the emotional life and adjustment of the pupil. The interrelationship of these phases of growth are pointed out, and the educational importance of the increase with age in capacity to learn from natural growth is emphasized. Stress is laid on the emotional reactions and personal adjustment of the pupil so that the teacher in his effort to stimulate his pupils to learn subject matter will not overlook the pupil, with his feelings, emotions, and personal problems.

A prominent place is given to the problems of learning. Consequently several chapters are devoted to the capacity to learn, the principles of learning, factors influencing learning, how to study effectively, transfer of training, and methods of teaching. In this connection, the measuring and marking of pupils' learning and achievement are also discussed.

On the topic of nature and nurture, the author takes a divided point of view. In some respects, he is a rank hereditarian, believing, for example, that extremes in capacity, particularly the highest, are determined almost entirely by heredity. On the other hand, he believes that people's attitudes, points of view, and beliefs are acquired. The capacity for learning academic

material is probably fixed within fairly narrow limits by nature, but the health of children, especially in infancy, depends for the great majority on the care that they receive. All in all, the evidence indicates that both nature and nurture are extremely important and that we should make the most of each.

This book is not written as representative of any school of psychology. Not being a doctrinaire, the author has tried to utilize the experimental work from the sources applicable to the problem of education. No psychologist of any school is entirely wrong or entirely right. It probably is best in an elementary textbook to keep free from controversy and avoid extremes, making use of all psychology that will contribute to the improvement of the educational process.

An attempt has been made in discussing the problems to orient the pupil as completely as possible and to bring out many implications from the discussion. The author is opposed to narrow, arbitrary teachers whose methods are formal and consist largely of questions and answers, drill and review; on the other hand, he favors education that takes into account both child and subject matter, in which teaching methods are varied, where meaning is developed, and where the pupils live in a greatly enriched environment.

The author takes pleasure in acknowledging his indebtedness to a number of persons. First of all, it should be said that the greatest indebtedness is almost always to those workers who have reported their experimentation in their books and in the professional magazines. May he thank, especially, however, his present colleague Dr. Charles Saltus for reading the manuscript critically. May he also express his appreciation to a former teacher, Professor W. S. Miller, for whom he was office boy in his days as a graduate student; the author hopes that this book will show at least a little fruit from his indoctrination. He will surely recognize some of his very statements and experiences. The author is happy to acknowledge here also the extensive help that he received from his wife, who assisted materially by reading the manuscript and caring for innumerable details.

HERBERT SORENSON.

DULUTH, MINN.,
May, 1940.

EDITOR'S INTRODUCTION

Modern educational psychology is a revolutionary force, albeit without doubt happily unconscious of its subversive role. In its beginnings it was a relatively respectable offshoot of such branches of general psychology as were represented by the psychophysics of Gustav Theodor Fechner, the sense physiology of Hermann von Helmholtz, the laboratory experimentalism of Wilhelm Wundt, the quantitative observations of Francis Galton and J. McKeen Cattell, the mental measurements of Alfred Binet, Lewis M. Terman, and Edward L. Thorndike, and the theories of William James and John Dewey. With modest scientific intent it sought only to study the process of learning, but to do this job scientifically and well, according to the tenets of the new experimental psychology, the educational psychologists found themselves trying to isolate and measure a multitude of factors affecting the quality and extent of learning.

Thus the students of educational psychology discovered the learner himself. They had to chart the progress of his growth and development. They had to study him to find out all the ways in which he was different from his fellows. They had to track down all the items which caused him to learn poorly or effectively. Was he fatigued? What were his physical, his social, surroundings? Was he conscious of success or failure? How did his interests, aptitudes, and needs condition his learning? What characteristics made him able to change his ways with great speed and effect? What tendencies caused him to resist being different from what he was at any moment?

The education which the new psychology was designed to serve was a relatively static thing. It had used certain subject-matter tools for so long a time that it had forgotten their original purposes and had settled down in academic security to manipulate them for their own sweet sakes. Into this atmosphere of instrument worship, the scientific study of learning burst with upsetting effect. Modern education is now just beginning to feel the impact. Henceforth, at an accelerating speed, it seems

destined more and more to recognize that education was made for learners, that learners cannot be studied with a mere combination of pious hope and a glance of the eye, and that subject matter of whatever category is properly only a means to learning and never a sacred end in itself.

In the professional preparation of teachers, educational psychology must become to a greater extent than at present an instrument for understanding learners if it does not wish to be trampled and left behind in the movement it helped to start. It must be integrated with the whole task of teaching. It must be applied and used from the first by the teacher who would make it an effective means of stimulating and directing the process of learning.

The present book is designed to assist this phase of teacher education. It gives the story of psychology's service to education, it summarizes the useful evidence which is now available for the purpose of understanding and helping learners, and it recognizes frankly the great gaps in psychological findings which education needs to have filled.

The author of this book is eminently qualified to perform such a service. His long experience as a teacher of educational psychology, his researches in the field, his work in administering a program of teacher education, and his clear recognition of the great scope of modern education combine to fit him conspicuously for the task of telling how psychology can serve educational purposes.

HAROLD BENJAMIN.

UNIVERSITY OF MARYLAND,
May, 1940.

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CHAPTER I

INTRODUCTION

Both scientific psychology and scientific education are relatively new, being hardly older than this century. Even though all sciences, both social and natural, have experienced tremendous increments of growth and development during the past few decades, probably none has shown so much as psychology and education. Furthermore, it is probable that potential growth in these two related fields is greater than that for most other fields of learning, and consequently we may expect many changes and improvements in the future for both.

Should the reader examine carefully the books in either psychology or education that were written at the turn of the century, he will note that most of them, if not all, are very different from those written now several decades later. Today, the books on psychology and education are changing rapidly. Research and experimentation have been going on at a tremendous rate for the last thirty years, and there is no evidence of a letup.

Forty years ago, a student in psychology or education could have found in relatively few books almost all that was written on a topic in which he was interested. In some instances, he probably could have carried them from the library to his room in one trip without much strain on his muscles. Today if a student wishes to consult all the references in education and psychology on a given topic, he must consult hundreds of periodicals and books. All this illustrates the fact that there has been a great increase in knowledge the past few decades.

Comparatively little experimentation and actual research in education and psychology were conducted forty to fifty years ago. Significant work was under way at that time, but as experimental sciences these two were in their infancy; and even today, it is doubtful that they have reached even their adolescence.

The student therefore should realize that the material in this book even if based on the best experimental evidence and even if sound and logical today will, in not the very distant future, be supplanted by results of more refined experimentation. Probably evidence that now seems true will be proved untrue; new areas now unexplored will be investigated; and new evidence will be uncovered.

Thus the student should not study with the belief that in the field of psychology and education the answers to his problems are known absolutely. There is much today that will still be sound and valuable many years from now, but psychology and education are like streams flowing with different speeds, changing their courses, and always cutting into new areas. New interpretations, different theories, and reemphases are probably more the rule in the field of educational psychology than in most other fields of study.

As has been stated above, because of its dynamic and transitional nature, the student and teacher should not study educational psychology with the belief that they are acquiring facts that are eternal truths. It is desirable and even essential that they be familiar with the evidence, but it is important also that they have a speculative attitude, that they evaluate and weigh and make their conclusions tentative. They should remember that new evidence is always being submitted and modification and verification are always taking place.

Not in harmony with the points of view expressed above was the attitude of a student with whom the author came in contact. An instructor had presented seven points which the students copied into their notebooks. The next morning he said to his class, "I have just received a letter from a colleague who has been doing research on the subject that we discussed yesterday, and he has given me new evidence. We'll have to change one of the seven points and add another." Whereupon the student complained: "I wish the prof would stay put and not make any changes after he has once given us the points of a topic."

It is necessary to have the attitude of the true scholar. First of all the student should thoroughly acquaint himself with the evidence. When the evidence is understood, it should be evaluated and criticized; weaknesses should be found, if possible, and causes and effects sought for. Discussion is helpful, and reasonable skepticism desirable.

CHAPTER II

PHYSICAL GROWTH AND DEVELOPMENT

Directions for Study.—Two terms, *growth* and *development*, are used, and their meanings need to be carefully studied. Various phases of growth are discussed: prenatal; the few years of rapid growth following birth; the period of steady growth from the fourth year of life to the adolescent spurt which starts at about eleven or twelve and after three or four years gradually slows down as maturity is approached. (In the case of height, maturity is reached at the ages of about eighteen and twenty.)

The relationship between weight and height is set forth, and the reader should note this.

There is also a relationship between age and certain health problems. Note that certain physical weaknesses and diseases are more characteristic of some ages than of others.

Will every small child become a small adult; and, correspondingly, what is the relationship of medium-size and large children to adult size?

Evidence is given that shows that an adult is not merely a child grown up. Be able to explain that statement.

Various parts and organs of the body grow at different rates from birth to the age of twenty. Observe those differences, and learn what their implications are for education.

Physical education and athletic programs should take into account the stage of children's physical development. Basketball, football, and track are discussed from this point of view. What should be some of the objectives of a good health-education program?

Special attention is devoted to the growth of the brain as a whole and also according to its layers. Study carefully the nature of this growth, and observe the implications of this growth for education.

Do the physically well developed tend to have better brains, and do those that have better brains tend to be better developed physically? How strong is the tendency?

Ordinarily, the term *growth* refers to increase caused by becoming larger and heavier. We speak of growth of the muscles, growth of the brain, growth of the skeleton, and growth of the body in general. We usually measure growth in inches and in pounds.

Development is related to growth but indicates more specifically the change in character that takes place. Bones, for example, grow and become larger, but they also develop by changing their composition and becoming harder. The skull grows from infancy, but it also develops by filling over the "soft spot," the fontanel. At birth, a child is born with the number of his brain cells determined, and they grow larger, but they also develop by undergoing chemical change and by the formation of the medullary sheaths. Thus a child not only grows into manhood but develops also. Furthermore, the bodily parts change their sizes relative to each other. The head becomes proportionally smaller as children grow older, and the muscles become proportionally a larger part of the body. Internal changes take place also with the increase in the activity of some glands, such as the sex glands; and decrease in the activity of others, such as the pineal. Changes of this kind influence development and are coordinate with it.

Prenatal Growth.—A child has his beginning when the germ cell of his father fertilizes the germ cell of his mother. From a very small speck, the embryo grows and develops for a period of approximately nine months. Embryonic growth is slow in the absolute sense during the first part of gestation but very rapid relatively. There is a very slow increase in weight and size to begin with, even though the fetus multiplies in weight more rapidly just following conception than at any other time. The proportional increase is greater even though the absolute increase is less, because the human being is so small at the beginning. An increase of one milligram of a living organism that weighs much less is a greater proportional increase than an increase of 3 pounds in the case of an organism that weighs 4 pounds. The latter is approximately the increase that occurs during the last few months of gestation.

Physical Growth of Children.—Girls at birth weigh, on the average, about 7 pounds; boys, about 7½ pounds. Babies vary from these averages, but those under 5 pounds at birth have less

chance of survival. Tables I and II give weights for ages from five to fifteen, including essentially all grade-school and even some high-school children(1). The weights are for various ages and are according to height. The range excludes both the highest and the lowest 10 per cent of the children. Thus the weights are for the middle 80 per cent. In order to illustrate how to interpret this table, consider the data given for a seven-year-old boy who is 47 inches tall. Of boys seven years old and 47 inches tall, 80 per cent weigh between 47 and 55 pounds, but 10 per cent are below 47 pounds, and 10 per cent are above 55 pounds. It is assumed that if a boy's weight falls below 47 pounds and thus is included with the lightest 10 per cent, he deviates so much from the average that he requires special attention. Similarly for those who are above 55 pounds and are thus in the heaviest 10 per cent. It is a safe rule to conclude that too much deviation from the average either above or below is an unhealthful indication. In this instance, the lowest and highest tenths are regarded as including those who deviate so much that they may be considered as being outside the normal range.

There is so much of a range or variation for age and height that each child constitutes an individual case. For example, girls 44 inches tall have about the same weight range—40 to 47 and 40 to 48—for the ages ranging from five to eight. Furthermore, eight-year-old girls range in height from 43 to 55 inches and have corresponding "normal ranges" of weight from 38–46 to 66–81. These norms are general guides, but each child must be considered separately, and his growth and health status determined by careful examination. It will be found that a few who deviate so much in weight according to age and height that they are in the extreme tenths may be in good health and not pathological in any sense. Furthermore, there are those who are average according to height and weight and still not in good health.

In determining the individual child's height-weight status, his general structure should be examined and interpreted in terms of his hereditary background, for conceivably a child may be of family stock that tends to be either underweight or overweight, whereas some families tend to be of the slender and apparently frail type but are people of good health and long life. Still other families tend to be heavy and stocky and also of good health.