

WHAT IS APPLIED PSYCHOLOGY?

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The answer to the question: What is applied psychology? depends (a) upon the meaning of the word 'psychology', and (b) upon an understanding of the differences between 'applied' or its synonyms and 'pure' or its synonyms. The term 'psychology' may be defined from various points of view; for example, psychology is said to be the science of mind or consciousness, or the science of behavior or conduct, or the science of mental structures and functions, or, most generally, as the science of mental life. Strictly speaking, this last definition is too broad, because mental life includes, among others, the moral, aesthetic, logical and speculative aspects which are not subject-matter of psychology but belong to such mental sciences as ethics, aesthetics, logic, metaphysics, etc. To give, then, in a preliminary way a positive limitation to our term, we may define psychology as the science of mental life in its structural, functional, genetic, and social aspects, and indicate later in detail what these terms imply.

By 'applied psychology' we mean what is sometimes called practical psychology or psychotechnics or psychotechnology as opposed to 'pure' or 'theoretical' or 'general' psychology. In order to understand fully the differences between the two groups, it seems desirable to make a more extensive comparison, applicable to all 'general' and 'applied' sciences, because such a procedure will at the same time indicate the relation of applied psychology to other branches of knowledge and may thus help us to be sure of our own ground and consistent in our point of view.

It is sometimes stated that 'pure' science is interested in facts for their own sake or for the sake of merely knowing them, while applied science studies facts for utilitarian purposes. But it may be doubted whether the first of these two attitudes is ever realized in its extreme form, and if so, whether it is a truly scientific attitude. Nor is it any more reasonable to go to the other extreme and demand that each newly discovered fact should at once be assigned its utilitarian or practical value. It might be interesting to determine how many pure or abstract facts discovered more than ten years ago are still waiting for their practical application. The re-

sults of psychology, in particular, have frequently been arraigned as being too abstract and theoretical to be readily utilised in those concrete and practical events in which mental life plays an important part. This criticism is due to a failure to understand fully the differences between general and applied psychology.

Our general comparison will be based on the following five categories: aim, standpoint, problem, scope, and method, with their underlying principles. For the sake of greater transparency and easier treatment they have been condensed into the following schema, which will be further explained and illustrated by reference to various sciences in general and to general and applied psychology in particular.

In the first place, then, the ultimate *aim* of all general sciences is to extend and improve human knowledge. To appreciate its significance in the concrete, we may be permitted to indulge in a little speculation about its origin, based on the assumption that the childhood of the human race is reflected, at least in a measure, in the childhood of the individual. We may thus imagine that the first impetus to acquire knowledge came from an instinctive 'browsing' which in some of our ancestors was so strong as to manifest itself even after their more or less immediate bodily wants were satisfied and thus led to what we now call 'instinctive curiosity'; for this original, aimless browsing with its accidental rewards in the first crude discoveries probably afforded sufficient pleasure to make it self-perpetuating. The step from this leisurely browsing to an intentional searching for new and better ways of meeting certain situations probably depended upon the fact that the original discoveries could frequently be utilised. In this way the instinct of curiosity acquired a twofold biological value, for it could be indulged in either for its own satisfaction, as the forerunner of our modern 'purely intellectual pleasures'; or for the sake of making future conditions of life more comfortable, and future behavior or conduct more efficient. Now if 'pure' scientists are born and not made, they must have the browsing instinct in its 'purer', original form, for they take their keenest delight in the discovery of new truths. The aim of the applied sciences, on the other hand, is more prosaic, for they strive to enrich and improve the conditions and phases of human life and conduct, that is, they try to help us master or control difficult situations or meet them with more successful responses. This aim is attained by accumulating a body of facts bearing on these situations and responses, while the actual application of this knowledge is carried on by the practical expert. We have thus a *science* and an *art*

General or Pure or Theoretical
Sciences

Practical or Applied Sciences
or Technology

AIM

To extend and improve
Human Knowledge

To extend and improve
the conditions and phases of
Human Life and Conduct

STANDPOINT

of Objectivity or Universal Validity
as expressed in Scientific Laws

of Subjective Particularity or In-
dividual Interest in Utility

SCOPE

depends upon
Inherent Similarity of all facts of
a science or aspects of knowl-
edge

depends upon
Inherent Frequency of factors
composing concrete events

PROBLEM

to discover or establish instances of
universal similarity or validity
to trace their origin or development
to explain their causal connections

to analyse situations and responses
(or events) into variable and
constant or essential and unessen-
tial components
to trace their interrelations
to modify these components so as
to produce same results more
efficiently

METHOD

Observation and Experimentation
identical as to
Comparison, Repetition,
Accumulation, Modification,
Elimination, Measurement,
different as to
Simplification, Isolation,
Abstraction, Induction,
and Classification

Observation and Experimentation
identical as to
Comparison, Repetition,
Accumulation, Modification,
Elimination, Measurement,
different as to
Differentiation, Separation,
Correlation, Deduction,
and Standardization

of teaching, of medicine, of engineering, of agriculture, etc.
To be sure, sometimes both science and art are represented
in the same person; but likewise pure and applied science may
occur in the same individual, as when a psychologist interested
in the problems of color-blindness engages in testing his sub-

jects for the purpose of showing them how best to overcome their handicap. As a matter of fact, the distinctions which are to be drawn in this paper between pure and applied sciences are perhaps somewhat overemphasised for the purpose of clearer *thinking* and better *understanding* only, and it is readily granted that in actual practice there are many transitions and fusions.

The ultimate aim of pure psychology is, according to the general principle, to extend and improve our knowledge of mental life with regard to its structural, functional, genetic, and social aspects. We do not use the phrase 'mental life' in any technical sense, but include in it all varieties of conscious and semi-conscious experiences in their normal, sub-normal, and abnormal forms and in their fully and incompletely developed stages, both in human and other living beings. By the structural aspects of mental life we have reference to the most common elementary and complex experiences ranging from the simplest and more or less abstract and meaningless sense-impressions through the perceptions of external objects and their interpretations to the highest forms of intellectual complexity, as ideas, concepts, judgments, thoughts and also the emotions and voluntary choices and actions. The functional aspects involve the organization of our experiences on the basis of attention, memory, recognition, imagination, comparison, and reasoning. The genetic aspects include the development of mental life in the individual and in the race, while the social aspects involve those changes in mental life which are due to the social intercourse among human beings. We might summarise these statements by saying that general psychology aims to study the ultimate or essential nature and constitution of mental life or experience as a whole. While, for example it tries to find out how we reason and form judgments, it does not seek to determine whether our judgments are logically correct, or morally sound, or aesthetically valuable or in harmony with other metaphysical speculations.

On the other hand, applied psychology aims to investigate and improve those conditions and phases of human life and conduct which involve mental life, especially in its social aspects, since practically all human activity is nowadays carried on as a function of social intercourse. The solidarity and vital fitness of human society does not so much depend upon the physical likeness of its members as upon the harmonious interaction of their minds, which are of such great variety and complexity that any two of them will resemble each other only in a general way. And yet these minds are constantly entering into each other's situations to which prompt and sometimes

delicately balanced responses are required from both parties. In such events mental life is perhaps the most important factor, because it complicates the conditions and phases of human response or behavior to an unpredictable degree. These situations require therefore careful study, in order to improve, if possible, the conditions under which the two parties have to react upon each other and thereby exert also a beneficial influence upon their mental life.

Every discovery of a new fact, intentional or unintentional, is of course an extension of human knowledge and an enlargement of the conditions of human life and conduct. But it cannot help to improve either unless it can be viewed from certain scientific standpoints. Radio-activity, for example, remained an isolated, unintelligible phenomenon until it could be incorporated into physics as fitting under its well established laws of nature. And as soon as this was accomplished, radium began to exert its beneficial influence upon human life and conduct. The general sciences take for their *standpoint* an objective attitude which transcends the interests of the individual and looks for the universal validity of their facts that is expressed in the form of scientific laws. To use an example from psychology, take the fact that human beings can pay attention. General psychology, accordingly, asks, in which forms and stages of mental life is attention possible, what is attention, how many kinds or degrees of it occur, how long may it last, how many items may it include in a single moment, how does it change with age, sex, inheritance, and environment? and like questions. The answers give us the psychological laws of attention. Like other sciences, general psychology purposely eliminates or disregards unessential details and especially accidental individual differences, because they obscure the universal validity of its laws. Consequently, all scientific laws involve the assumption that all essential conditions remain constant.

In the case of the applied sciences, however, the standpoint is the very opposite. Here every concrete situation is an object of investigation in itself, appealing to the subjective interests of certain individuals on account of its immediate utility or threatening harmfulness. It becomes now a question, for example, how the law of gravity can be applied to aerial navigation, or, how certain laws of chemical action can be used in fighting particular diseases, etc. The significance of this principle of subjective particularity for the standpoint of applied psychology is obvious. While general psychology, for example, reduces our daily actions to a universal schema typified in the simple reaction experiment,

applied psychology studies these same actions as nearly in their original complexity and concreteness as experimental control of conditions will allow; and the more this ideal is approached, the more applicable will be the results. Recall, for example, the testing of witnesses as to their fidelity, reliability, credulity, suggestibility, etc., or the studies of the influence of humidity and temperature on quality and quantity of work produced, or the diagnosis for musical ability, or the effectiveness of certain advertisements, and others. In all these cases the situations presented to the individual tested and the responses required from them are usually very similar to those found in actual life. Consequently, the results obtained should not be generalized to the extent of making them seem applicable to different circumstances or different individuals. In other words, we should not expect applied psychology to arrive at scientific laws of universal validity.

The rapid accumulation of scientific results since the days of Aristotle, and especially during the last three centuries, has made it absolutely necessary to classify all items of human knowledge into separate sciences, whose *scope* and subject-matter must be definitely outlined according to certain ultimate principles. In the case of the pure sciences the principle involved is that of the inherent similarity of the facts grouped together, so that, for example, observations on the atomic constitution of the universe or its parts belong to chemistry, while the structural and functional elements and interrelations of the same universe and its parts belong to the physical sciences. Again, the same universe in so far as it exhibits signs of life, past, present or future, is studied by the biological sciences; and in so far as it manifests mental life it belongs to the mental and historical sciences. It is thus evident that at bottom the scope of all pure sciences is the same, but the grouping and relating of facts is based upon the inherent similarities of the facts or aspects of knowledge. To indicate the scope of general psychology in particular, it confines itself, as pointed out before, to the structural, functional, genetic, and social aspects of mental life wherever it is manifested. It is therefore not limited to the human normal adult individual, but its various branches include also the mental life of infants, children, adolescents, senescents, of abnormal and subnormal persons, of savages and civilized people, past and present, of small and large social units, and also of animals and plants. One of the special branches studies the relations between mental changes and physical changes in the external world, while another branch seeks to correlate mental and neural changes.

In all these branches the standpoint remains the same, that is, they study mental changes with a view toward the universal validity of the facts discovered.

The scope of the applied sciences is based on an entirely different principle. Here such facts are grouped together under a single science which frequently constitute the same concrete situation or require the same concrete response from human beings. Thus the various branches of the science of engineering are differentiated from each other on the basis of specialized tasks and divided into mechanical, civil, naval, sanitary, architectural, efficiency, illuminating, and other kinds of engineering, each group trying to meet certain situations whose inherent resemblance is based on their complexity, that is, on the concurrence of similar factors in similar arrangements. If one examines the factors which constitute a concrete situation from the standpoint of the general sciences to which they may belong, one will find in most cases a number of such sciences are represented which are sometimes not very closely related to each other. Consequently, in order to specialise in any single applied science it is necessary to study at least to some extent all those general sciences upon which its facts are based. Hence the student of medicine, to give a single example, is required to know biology, physics, chemistry, and sometimes psychology, besides anatomy, physiology, embryology, pathology, etc. Still more extensive must be the foundations of applied psychology, because its scope includes every possible situation or response which involves mental life. Since it is impossible within the short span of a human life-time to cover this ground, it becomes necessary to develop special branches of applied psychology which are to be cultivated by specialists in each field. So far the development of these subdivisions has been left to chance interests of individuals or to public demands. But the time seems ripe to systematize and organize the efforts of building up an applied psychology equal in rank to that of other applied sciences, and the author hopes that this task will be facilitated by the Journal of Applied Psychology, the plans for which had been slowly shaping themselves in his mind for some time.

In outlining the scope of applied psychology we cannot be confined to the field as so far actually cultivated, but must include in our discussion the possible extensions which are provided for in the formulation of the general principle as adapted to our special topic. According to it the scope of applied psychology is the study of those conditions of human life and conduct, that is, those concrete situations and responses, in which the mental life of human beings is an im-

portant factor. The *situations* may be roughly classified into three groups, namely, those which arise (a) from the individual's hereditary equipment, (b) from his physical environment, and (c) from his social environment. The first division would include the study of individual mentalities of sex, age, race, special talent, genius, criminal, types of character, individual differences and such defects in mental equipment as do not involve abnormalities but only developmental retardation; and this branch might be called *diagnostic psychology*. The next subdivision will study the influences of climate, weather, humidity, temperature, nutrition, sanitation and other environmental conditions upon mental life and receive the name environmental or better *bionomic psychology*. The third group comprises the influences of tradition, customs, beliefs, superstitions, myths, religions, panics, wars, strikes, and such institutional forces as administration, organization, discipline, and others, upon the mental life of the individual or the group and may therefore be called *socionomic psychology*. It is to be distinguished from social or sociologic psychology, which is a branch of general psychology, not only by scope, but also by aim, standpoint, problem and method.—The *responses* which involve mental life may also be grouped into three classes, (a) vocational, (b) recreational, and (c) communicational activities. The *psychology of vocational activities* will include the study of mental factors involved, for example, in legal, medical, educational, industrial, commercial, and other skilled and unskilled work. The *psychology of recreational activities* will study, among other topics, the mental life involved in artistic creations and enjoyments, in playing games and musical instruments, in singing, taking part in sports and athletics, in more passive amusements, in pursuing hobbies and similar pastimes and other leisurely occupations. The *psychology of communicational activities*, finally, will investigate the mental factors involved in reading, writing, speaking, stuttering, using gestures and other symbols, signals and codes, typewriting, stenography, telegraphy, telephoning, printing, interpreting, translating, and the like. To be sure, there may be overlappings, as the same activity may be used for all three purposes; but when this is the case, there will be found also significant mental differences. Nothing has been said here of the psychology of learning, because it may belong into both, general and applied psychology, according to its treatment.

A complete bibliography or a historical sketch of psychology would show that some of the topics here mentioned have been investigated in the very early stages of our science, for in-

stance, reading, writing, religion, beliefs, superstitions, and certain aesthetic experiences. Other topics have begun to occupy the center of interest more recently, as those of individual differences, defects, studies of humidity and temperature, examinations of witnesses, business appeals, and others. Some topics, finally, have not yet received much or any attention, as character-diagnosis, nutritional influences, administrative and disciplinary factors, salesmanship, amusements, and others. Only three of all these numerous topics have so far had their own organs of publicity, the psychology of religious experiences, of education, and of retardation; all the other topics will find representation in the new Journal of Applied Psychology.

The difference in scope between the general and applied sciences is intimately connected with a wide difference in their *problems*. It is frequently stated that the general sciences have at least three or four chief problems, briefly enumerated as those of analysis, synthesis, genesis, and explanation. The first two consist in the discovery and establishment of new instances of universal similarity and validity, the third involves the question of origin and development, and the last searches for causal connections. In some sciences the third, in others, the fourth problem, is of minor importance. In general psychology all four receive about equal attention. The object of analysis is to reduce mental life to its most elementary experiences and to describe the structural composition of mental complexes. The problem of synthesis is to discover the universally valid laws of these elementary and complex experiences and especially to describe their functions in the general course of mental life. The question of mental development is attacked by genetic psychology, which includes child-study, racial, social, and anthropological enquiries. Finally, the problem of explanation is to investigate the relations of mental life to concomitant physical and physiological phenomena.

The problems of the applied sciences are in so far similar as they also include analysis and explanation. Since, however, they deal with complex situations as the conditions of human life and conduct, their first problem is an analysis of these situations, but not for the sake of establishing ultimate elements and universal validity, but rather for the purpose of discovering their constant and variable, or essential and unessential components or contributing factors. The second problem consists in a similar analysis of the responses depending on the particular situations investigated, again for the sake of finding their essential and unessential or constant and variable factors. In a third group of problems an explana-

tion of the interrelations between the situations and responses is aimed at and frequently involves a quantitative or statistical enquiry. The last and perhaps most important problem is to find means of modifying either situations or responses or both in such a way as to attain the same or better results with greater economy of the essential components. Again, as in the case of the general sciences, these four kinds of problems are not of equal weight in all of the applied sciences or in all of their investigations.

Let us illustrate these four problems by a topic of civil engineering, namely, road-building. (1) Among the components of the situation are: a survey of the country through which a new road is to be laid, a measurement of its elevations, a study of its drainage, both on the surface and below it, an analysis of the soil, a study of geological obstructions, of climatic and weather influences, a consideration of the distance of building material and the methods of hauling it, of other existing means of traffic, as rivers, canals, railroads, branch and cross roads, and of the location of communities, dwellings, schoolhouses, churches, stores and similar other social centers of the neighborhoods. (2) An analysis of the responses or phases of human behavior involved will reveal among others the following components: vehicles of traffic used by the inhabitants, the latter's purposes of building the new road, weight of the goods to be shipped over it and of the vehicles used, the desire of avoiding either steep grades or long detours, and the like. (3) The problem of the interrelations between these and the former components require the consideration of the possible width of the road, of its general direction, of grading and shading, of junctions or crossings with other lines of traffic, and of avoidance of sharp curves or hidden turns. (4) The last problem consists in an enquiry into original cost of construction and material, into future expenses of repairs and upkeep, into avoidance of unnecessary bridges, railroad crossings or tunnels, into value of traffic served by the road, and other items.

To consider now the case of applied psychology, the first chief problem is to analyse the mental components of certain situations or conditions of human behavior. A good example may be found in the psychology of salesmanship. Here we have to deal either with the travelling salesman or the travelling customer. The latter may be in one of three possible states of mind, (a) he may know what particular article he wants to buy when entering a store, or (b) he may know what kind of an article he wants to buy, or (c) he may merely want to look around, without definite intentions of buying

anything. Each of these states may be further analysed. Among the mental components of (a) may be: a definite idea of the article wanted as to size, color, shape, price, brand, packing, etc.; a definite purpose for the article, a definite or indefinite idea as to where to buy it or try to do so, a definite purpose to buy it, and a definite or indefinite plan as to the next important step after the purchase, manifested frequently by an attitude of haste or of leisure. The salesclerk's responses should be regulated by a knowledge of such components just as much as by the circumstances as to whether the desired article is in stock or "just out." Here, however, we are touching upon the second problem of applied psychology, an analysis of the mental components of human behavior. To continue our previous example, the sales-clerk's response may be of the listless, mechanical, indifferent sort revealing a minimum of mental life,—as is frequently seen in booths for selling tickets to some exhibition or in department stores selling only very low-priced goods,—or it may be inattentive, distracted, as if disturbed by the customer's appearance, and manifesting a lack of interest in the process of the sale, or it may be of the quick, alert, interested, attentive kind that is ready to pierce the customer's mind and to read his thoughts, for the purpose of selling him something else. To proceed now to the third problem, applied psychology has to show the relations of the mental components of the response to the components of the situations. Thus the response of the mechanical, listless sales-clerk may have been conditioned by fatigue, or underfeeding, or poor health, or lack of experience, or underpay, or the like. The last problem of applied psychology is to modify or improve the essential components in situations or responses or both in such a way as to help attain more efficient results. Of course in any concrete case it is necessary that all the other essential non-mental components be likewise improved, otherwise they might offset or destroy any changes that the former might have brought about. This is, of course, the work of the practical expert, but his knowledge of the ways of improving the whole event must come from the various applied sciences that are relevant to the case in question. Illustrations of both, the balanced and the unbalanced efforts of improvement are frequently found among advertisements. Thus an advertisement may be constructed correctly according to psychological principles, but appear in a poor medium, or at the wrong time, or in the wrong community. For example, the writer has in mind a beautiful and attractive streetcar poster of a certain well-known summer school exhibited in a community of another

state in which a large summer school was conducted. More frequently it happens that an advertisement correctly employs certain essential psychological principles but violates certain others just as essential. Such mistakes are due, as a rule, to an incomplete analysis of the situation or the expected response.

Since the problems of the general and applied sciences are in partial agreement, that is, in so far as they involve analysis and explanation, we may expect that the two groups will be similar, to some extent at least, with regard to their *method* of investigation, which is the last point of comparison in our schema. In general, both groups of sciences may be said to depend upon the method of observation for the accumulation of their facts, and the more detailed procedure will include the processes of comparison, repetition, modification, elimination, and measurement. These steps are facilitated by the use of experimental control of the factors under investigation. In the general sciences this control is as a rule very rigid and refined and makes it possible to greatly simplify the conditions by isolating the desired components, sometimes with the additional help of mental abstraction, until as a result the ultimate, unanalysable elements are discovered. The latter may then be recombined in old and new ways, and by this inductive procedure the universal validity of their laws is established. For an illustration let us watch the botanist in his study of the nutritive processes of a certain plant. He will plant a large number of seeds of that plant in various kinds of soil, which he has either artificially prepared by mixing or whose chemical composition he has otherwise previously analysed. The amounts of water, heat, light, etc., administered daily to each specimen are carefully measured and recorded and the rate of growth is observed in minute detail, including among others the number, size, and first appearance of roots, stems, leaves, buds, flowers, fruit, etc. These observations are repeated, sometimes for years, and with still further modifications until all accidental factors are eliminated. The results are then compared with a careful microscopical analysis of the cells of the different parts of the plant, and any doubtful facts must be repeatedly tested and verified, before a universally valid description of the nutritive processes of this plant is obtained. On the basis of the results obtained the plant receives a certain classification in the botanial system. Such is, if not always the actual, at least the ideal method, and with minor variations, due mostly to differences in subject-matter, it is also employed by general psychology. Again, in any single investigation of some particular problem some of these

steps may be omitted, others may have to be very much extended, while some may be combined into a single act. Likewise the actual temporal order of these stages in the procedure may vary from time to time, both in the general and the applied sciences.

The latter differ from the former in several respects. Since their problem of analysis is not to find ultimate elements, but to single out the constant from the variable or the essential from the unessential components, they do not have to carry the process of simplification to the highest degree, so that they may substitute for it the methods of differentiation and separation. Furthermore, since they always deal with a concrete situation or response, a too rigid and refined control of conditions might destroy the object of investigation and either substitute for it an artificial product which is not true to life, or at least prevent the study of the relations of the components to each other and to the concrete whole. The latter step constitutes the method of correlation and takes the place of induction. It is often supplemented by a process of deduction which consists in referring the separated components to the laws of the corresponding general science and inferring from them such changes in the concrete event under investigation as promise more efficient results in the end. This leads to the last step in the method, that of standardization, which takes the place of classification and is based, in part at least, on the results obtained by the corresponding general sciences. Standardization thus is the process by which the fourth problem of the applied sciences is to be solved.

With the exception of this last step the differences in the methods of the two groups of sciences are in some cases very much obliterated. Nevertheless it seems important to keep the two separated in thought at least, in order to avoid confusions and conflicts in actual practice. Thus a clear understanding of these differences will be helpful in deciding the present claims of the value of mental tests. An attempt to settle this dispute is of course beyond the scope of this paper, although it is hoped that the latter may contribute its share toward a satisfactory solution of the difficulties involved. Instead, it seems more appropriate to conclude with a concrete illustration of the experimental procedure in a problem of applied psychology.

Suppose, then, it was desired to discover which persons out of ten possible suspects had been witnesses of or taken part in a certain event, especially as the participants might try to conceal connection with it. The first thing to do is to obtain, or if necessary to construct, a standardized list of one

hundred irrelevant words which are sufficiently general in character and which refer to nearly every possible general topic of life except to the event in question. Then make out a new list of 25 to 50 'relevant' words, each referring more or less pointedly to some phase of this event, (this step involves differentiation). Then mix the two lists in such a way that there are always two or three irrelevant words in succession, but the relevant words are sometimes scattered singly amongst them, sometimes follow in small groups of two, three, or four (modification). Now submit each of the ten subjects singly (separation) to the following tests: after explaining and illustrating to the subject that he is to respond as quickly as possible to each word said to him with the first word occurring to him, pronounce the first word and at the same time start a stopwatch. As soon as the subject begins to reply stop the watch, write down what he says and the length of time it took to answer (measurement). This process is continued until the complete list has been submitted. At a later trial (repetition) the following modification may be introduced: ask the subject to respond as quickly as possible, whenever he can, with the same word that he used before, but if it does not readily recur to give the very first new word that comes to his mind. Calculate next the time averages and their mean variations for each whole list, for the irrelevant, and the relevant words separately and correlate them with the kind of replies given. A comparison of the quantitative and qualitative data will help in the elimination of those persons whose results show no marked differences in their responses to the relevant and irrelevant words. In the case of the others it is not only possible, by deduction from the general laws of emotion, to say that they have been present at the event, but one may sometimes infer from the nature of their replies to what extent they have taken part in the concealed event. We have not indicated in this abbreviated illustration the various precautions that may be necessary in order to control the conditions of experimentation and that should be considered essential factors in the method.

In place of a summary of this systematic enquiry into the nature of applied psychology a final word may be said about the relations between applied psychology as a *science* and as the *art* of making practical applications of its results to concrete events in daily life. The question is sometimes raised: Are the scientific results of psychology so fully established that we are justified in making practical use of them? An affirmative answer can be given only with reference to a few topics, and even here only with certain limitations and quali-

fications. A true selection of these topics can be made only by a psychologist who is a specialist and thoroughly familiar with the whole field of his science, and all applications should be made either under his supervision or with his full approval. But if he wishes to make the applications himself, he thus becomes a practical expert, and it becomes now necessary for him to study also the practical field in which he wishes to work. Take the case of advertising. As a psychologist he may be able to analyse the mental factors entering into this work, but there are many more items of a very technical nature, such as a knowledge of printers' types and cuts, of newspaper organization, of articles advertised, of other mediums, and so on, without which he could not become an expert writer of advertisements. On the other hand, the professional writer of advertisements cannot intelligently and successfully employ psychological principles without a fair knowledge of the two branches of the science, because there is no single universal principle that can be applied equally well to all kinds of advertisements, so that in each case he has to make a careful selection and balance of all factors involved. This principle of subjective particularity, as we have called it, holds true of all concrete events involving mental life, and its recognition will prevent many wrong expectations or disappointments with regard to the immediate benefits to be derived from applied psychology.