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PSYCHOLOGY AND SCIENTIFIC METHODS

PSYCHOLOGY: WHAT IS IT ABOUT?

THIS brief series of papers is written in the firm belief that the study of psychology is made more difficult and that the advance of psychology is checked, first, through the common failure to recognize explicitly the real subject-matter of the science and, secondly, through the underestimate of adequate description in psychology. Both tendencies reveal themselves in what I take to be a mischievous disregard for consistent, though provisional, definition and for adequate classification. There is need of courage to make this avowal in the face of present-day disparagement of definition and classification; but it seems to me very evident that for purposes as well of useful introspection as of fruitful experiment, the psychologist—student or teacher—needs to know what he is observing and describing. Until there shall be more explicit agreement on this fundamental question, one may be pardoned for recurring to it again and again.

Any serious attempt to define and to classify forms of consciousness will act as a "red rag" waved in the face of many critics. The effort to define accurately and to classify in any detail is bound, they will urge, to result in a conservative clinging to conclusions once reached and in a love of schedules and schemes for their own sake. The system maker, they will insist, is likely to subordinate the facts to his classification and to cut down the truth to the measure of his framework. In the opening paper of this series I wish to discuss this criticism of definition and classification and to consider their position in psychology. The relation between the two may be simply stated: classification presupposes definition, and no satisfactory classification is possible unless the definitions on which it is based are self-consistent and strictly adhered to. Besides being founded on adequate definition, an ideal classification must, furthermore, be made on a wise principle—in other words, it must employ an obvious, a simple, and a fruitful principle of division, and it must be complete enough to cover the facts under discussion.

Up to a certain point, all scientists classify and define the phenomena which they investigate. Every student must have a

notion of the objects of his study; and yet the facts taken one by one would defy the span of attention. Thus, the only chance alike for adequate description and for satisfactory explanation is, first, provisional definition and, then, such a grouping of the facts that a single pulse of attention and a single explanation will cover a whole mass of phenomena. But in spite of these obvious considerations psychologists in general underestimate the importance of careful and consistent definition. Most of the difficulties of our psychological text-books are due, in my opinion, to a certain looseness of conception, or at any rate of definition. The thoughtful student is actually checked in his psychological advance through his futile attempts to discover what his author means by a given term, or through his difficulty in reconciling really divergent accounts of an experience to which a single name is given.

The failure to classify consistently and completely is less significant. Yet one really does not know a phenomenon till one has fully grasped its essential likenesses to other facts; and the complete knowledge of likenesses and differences implies an adequate classification. It can hardly be maintained that writers of our text-books of psychology are always alive to the fact that the student is actually helped by careful classification and embarrassed both by the omissions and by the inconsistencies of faulty systems. In most psychology books one finds, it must be admitted, enumerations in place of systematic groupings, classifications on conflicting principles, errors and inconsistencies of all kinds—for example, the intrusion of “images” into the class of psychic elements, and the lack of any mention of “association” under the head of “psychic connection.”

Yet the modern attitude of disparagement toward definition and classification has its roots in a justified apprehension of the dangers with which each procedure is beset. On the one hand, definition and classification may be premature and overrigid; and, more specifically, both may be merely verbal. The force of this second criticism must at once be admitted. Psychology, in the hands of a teacher who lays stress on verbal definitions and on traditional groupings, may become a mere text-book subject, a memorizing of verbal statements and of uncomprehended schedules. And a science degraded into a study of words and formulæ is worse than useless, it is degenerate. But definition and classification rightly conceived are not verbal; and a definition, though expressed in a form of words, is not a form of words, but a meaning, the statement of verified and then generalized experience. No teacher worth the name will allow a student to recite a definition without concretely illustrating it, or to study an attempted classification without first framing one on the basis of his own experience.

The justice of the more general criticism has also frankly to be acknowledged. The systematic psychologist is in truth beset by the temptation to base definition on insufficient observation, and he sometimes refuses to abandon or widen definitions once gained and classifications once tabulated in favor of the results of fresh observation. In both cases scientific progress is checked at its source. But it is foolish to foreswear classification on the ground that it may be overworked, to refuse, as it were, to make use of a set of pigeonholes, lest one put things into the wrong places or become so enamored of a given arrangement that one is incapable of changing it. To alter the figure: definitions and the resulting classifications are not roosts, but perches for further flight. The advocates of careful definition and of logical and complete classification must be first to recognize that there is nothing sacred or unalterable in either. Definition and descriptive classification are, indeed, second in science, not first: they follow on analytic observation and must be altered with every supplement or correction of the results of observation. Again, definition and descriptive classification are second in science, not last: the scientist may not rest in awed contemplation of either, but must follow them by honest attempts at explanation. In a word, the rôle of classification and of definition is neither the initial part nor the final one, yet each has an important and a somewhat neglected part to play. One may, indeed, compare the value of definition and grouping for the student of science to the use of the grammatical paradigm for the student of language. By the older method the student learned rules and paradigms as a preparation for reading; by the so-called natural method he attempts to read with blithe disregard of rule and form. Ideally, however, the study of grammar is the second stage in learning a language, just as the framing of definition and table is a middle stage in all scientific study.

I have so far spoken of the value of definition and classification to the student of what is called purely introspective psychology. It seems to me that both are essential, also, to the widening of the science; and since a concern for experimental and comparative psychology is often regarded as a reason for the neglect of definition and classification, I shall briefly state the important reasons for the opposite view. In my opinion, no student can be fitted for the experimental investigation of the nature and conditions of an experience who is incapable of the definition and the classification essential to the identification of experiences and to the interpretation alike of consciousness and of behavior. It is not difficult to justify this statement: To bring about artificially a given result one must be able to describe, in advance, its essential characters—in a word, to classify it. It is therefore essential that one start with a preliminary, but

differentiated, knowledge of the object of study. Pasteur (to select an example outside the domain of psychology) could not have experimented on the effect of the air at different altitudes upon a substance in which bacteria thrive, had he not known what bacteria are and how to identify them.¹ Similarly, Lehmann could not have experimented on the possibility of recognition without the occurrence of associated images, had he not been able to interpret his subjects' record of the experience by his own knowledge of the nature of recognition. On the other hand, every student of the literature of experimental psychology has wasted hours of his time because the experimenters whose results he is studying have held hazy, shifting, and inconsistent conceptions of the very experiences which they purport to investigate.

In comparative psychology, again, we infer the nature of the consciousness of animals from observation of their behavior and from examination of their structure—in particular, of their sense organs. At best the task is intricate and difficult, for we are all too prone to attribute to animals the experience which we think we should have if we acted as they act. The peculiar value of experimental comparative psychology is that it serves to check this tendency and to provide a basis of fact for our inferences. But boxes and labyrinths would avail little except in the hands of men who clearly know the nature of the consciousness which they attribute or deny to animals. On the other hand, the peculiar value of recent studies in animal imitation is precisely the careful analysis of imitation which the experimenters make, their distinction of objective imitation—that is, fortuitous repetition—from conscious, subjective, voluntary imitation, and their rigid exclusion of cases in which their animals give indication of imitation only in the former unpsychological sense.

This defense of definition and classification is, I trust, no unfitting introduction to a series of papers in which the effort will be made to define the basal fact of psychology and to outline the essential divisions of consciousness.

I. PSYCHOLOGY AS SCIENCE OF THE IDEA: WHOSE IDEA?

Psychology has been variously defined as the science of "consciousness" or of "the mental life" or of "experience." Of late years vigorous attempts have been made, from the most various motives, to eject the term consciousness from our vocabulary, but, in my

¹ Cf. Frances H. Rousmaniere, "A Definition of Experimentation," this JOURNAL, Vol. III., p. 676.

opinion, these efforts, though richly significant, are metaphysical, not psychological, in their import, since all are mainly concerned to overcome the dualistic opposition of psychical to physical.² For, whether accurate or inaccurate, the attempt to balance the account of thought and thing—that is, to distinguish psychical from physical—is concerned with the problem of ultimate reality, not with the explanation and description of observed facts, and is therefore metaphysical, not scientific, in character. Tradition, however, and methodological expediency alike counsel us, as psychologists, to admit from our standpoint the every-day opposition of psychical to physical; to insist that, psychologically regarded, consciousness, or experience, is a primary fact; and to give over the essentially metaphysical attempt to reduce psychical to physical, or physical to psychical, or both to a more fundamental category.

But even among psychologists who agree to define psychology, in a preliminary way, as “science of consciousness” or “science of the mental life” or “science of psychical phenomena,” there is disagreement in regard to the further limitation of the conception. There are, in truth, at least three contemporary conceptions of consciousness and accordingly three types of psychological theory. Psychology is conceived (1) as science of the mental state, or idea, (2) as science of the mental function, and (3) as science of the conscious self.³ I am myself profoundly convinced that consciousness is never

² James (“Does ‘consciousness’ exist?” this JOURNAL, Vol. I., pp. 477 ff.), Perry (“Conceptions and Misconceptions of Consciousness,” *Psychological Review*, Vol. XI., pp. 282 ff.) and Bawden (*Philosophical Review*, Vol. XI., pp. 474 ff., Vol. XII., pp. 299 ff., Vol. XIII., pp. 298 ff., 541 ff., this JOURNAL, Vol. I., pp. 62 ff.) seek to gain this end by coordinating psychical and physical under a higher concept—“experience” or “action.” Woodbridge (“The Nature of Consciousness,” this JOURNAL, Vol. II., pp. 119 ff., “The Problem of Consciousness,” in the Garman Commemorative Volume, pp. 137 ff.) and Montague (this JOURNAL, Vol. II., pp. 309 ff.), on the other hand, subordinate consciousness to thing by conceiving consciousness as a relation (coordinate with space and time) between things. It could be shown, I think, that the first theory is as strongly idealistic in its implications as the second theory is realistic. But such comments would be as metaphysical as the theories themselves, and are therefore out of place in a purely psychological paper.

James Ward’s objection to the term “consciousness” (“On the Definition of Psychology,” *British Journal of Psychology*, Vol. I., pp. 21 ff.) is based on a different ground—his conviction that the term is ambiguously used for reflective “self-consciousness.” On the main issue of these papers I understand myself to be in entire accord with Professor Ward.

³ In “Der doppelte Standpunkt in der Psychologie,” p. 33, note, I suggested the equivalence of the second and third of these conceptions of psychology. In a later paper of this series I shall state more exactly my view of the relation of function to self. In the meantime it should be noted that the identification of self-psychology and function-psychology has been disavowed by certain functional psychologists. (Cf. Stumpf, monograph cited below, p. 9, note; F. Arnold, *Psychological Review*, Vol. XII., p. 372.)

adequately conceived except as conscious self; and that both the other conceptions of consciousness imply this. I believe, moreover, that the explicit adoption of this view would illuminate and clarify the treatment of psychology and would facilitate experimental and comparative study. This deep-rooted persuasion of the utility of the conception of psychology as science of the conscious self is my excuse for bringing it forward once more and for considering the objections urged against it.

As science of idea, psychology treats of the "mental state" or "content of consciousness" or "idea"—that is, of consciousness when consciousness is (1) regarded in abstraction from any self or subject or mind, and (2) viewed as temporal, as belonging to some particular moment. The use of the term "idea" in this sense dates from Locke. It is open to the objection that the word is often employed with a narrower meaning, that is, as opposed to "percept," on the one hand, and to "emotion" and "volition," on the other; but I have found no single word to take its place. Professor Titchener, to be sure, replaces the word "idea" by "mental process," but his appropriation of this term must be energetically opposed. The word "process" implies either an operation, activity, or function, or else a succession or progression. In the first sense the term has no place in a psychology which treats itself as analogous to morphology. In the second sense it is applicable not, as in Titchener's usage, to a single "idea," but to the whole series of ideas.⁴ I may add that I scruple to use the expression "structural psychology" in place of my awkward term "idea psychology," since I prefer to reserve the word "structural" to characterize the useful analysis into elements which—despite claims to the contrary—is not the exclusive procedure of "idea psychology."

But psychology is inadequately viewed as science of ideas. This inadequacy may be stated in the following fashion: If I conceive psychology as science of ideas I inevitably raise the scientifically relevant question, Whose idea? and then I arbitrarily refuse to answer my own question. In other words, the "idea" is immediately experienced as idea of a self, or subject, mind, ego—call it as one will. To refuse to deal with this self is indeed theoretically possible, but is a needlessly abstract, an artificial, an incomplete procedure. In a later paper of this series the effort will be made to show that an idea psychology is incapable, through this funda-

⁴ Cf. Titchener, "An Outline of Psychology" (New Edition, 1905, § 2, p. 9). For other statements of the second criticism, cf. my paper on "A Reconciliation between Structural and Functional Psychology," *Psychological Review*, Vol. XIII., p. 64, note, and J. R. Angell, "The Province of Functional Psychology," *ibid.*, Vol. XIV., p. 66.

mental inadequacy, of describing adequately some, at least, of the facts which it studies.

It has been objected that my contention, ideas are experienced as belonging to a self, is based on my own self-observation merely, and that I have not a right to foist the results of my introspection on any psychologist who declares that he finds himself conscious of ideas and not, at the same time, conscious of the self who has the ideas. In reply, I must emphatically state that I have never found any upholder of idea psychology who does not unambiguously imply the consciousness of self as part of the experience described in terms of the idea. Thus, Professor Titchener actually defines "mental process" (his synonym, already criticized, for "idea") in terms of self: The mental process, he says, is "any process falling within the range of *our experience* in the origination and continuance of which *we are ourselves* necessarily concerned."⁵ And Professor Münsterberg defines the psychical as "that which may be experienced by one subject only," in contrast with the physical which he describes as "that which can be thought to be experienced by several subjects together."⁶ Titchener, moreover, distinguishes his two elemental forms of mental process, sensation and affection, on the ground that, "regarded from the point of view of ordinary life, blue and warm are somehow detachable from oneself, whereas pleasantness is always within oneself."⁷ Now, it is hard to see how the idea psychologist can reasonably deny that the self, or I, is after all the basal fact of psychology, if he himself has recourse to the consciousness of self in distinguishing ideas from each other and—more than all—if he defines the idea ("mental process," "psychic content") in terms of self. In the words of Professor Ward: "The psychologist can not bring out the characteristics of his own standpoint by saying, There are such and such presentations or feelings. . . . To this end his statements must (and always do) take the form, *He, this experient, has* such and such presentations, feels thus and thus. . . . And . . . to eliminate [this] is to ignore the experience of the individual subject altogether and to abolish what is characteristic of psychology."⁸

To this argument, from the implication by idea psychologists of a self, Professor Titchener⁹ and others have objected that the self,

⁵ "Outline of Psychology," § 2; italics mine.

⁶ "Grundzüge der Psychologie," p. 72. Münsterberg, however, doubtless regards this as a philosophical definition.

⁷ "Outline of Psychology," § 32 (1).

⁸ "On the Definition of Psychology," *The British Journal of Psychology*, Vol. I., p. 23. Cf. the statement of Lipps ("Leitfaden der Psychologie," p. 2), "To every content of consciousness belongs this relatedness to the I."

⁹ *Philosophical Review*, Vol. XV., pp. 93 ff. Cf. W. B. Pillsbury, "The Ego and Empirical Psychology," *Philosophical Review*, Vol. XVI., pp. 387 ff.

thus implied or referred to, is regarded as a philosophical or an epistemological reality, but not as the proper object of a scientific psychology. But Titchener himself suggests the possibility of a scientific study of the self when he says, in the passage last quoted, that "from the point of view of ordinary life . . . pleasantness is . . . within oneself." For, by these words, he rightly implies that the self is an object of every-day consciousness; and since any such object of ordinary consciousness may become the object, also, of scientific study, it follows that there may be a scientific study of oneself. In a word, the plain man's "self," the self about which one raises no metaphysical question of ultimate reality or final destiny or definite place in the total scheme of things, may become the object also of the psychologist's observation.

Later papers of this series will seek to elucidate further this conception of the self. The main object of this section has been to lay stress on the truth that the idea is immediately experienced as idea of a self; that this self may be scientifically studied; that, accordingly, psychology is inadequately conceived as science of ideas.

II. PSYCHOLOGY AS SCIENCE OF MENTAL FUNCTIONS: FUNCTIONS OF WHAT?

THE reaction against the artificiality and abstractness of psychology conceived as science of ideas, or mental contents, has for the most part expressed itself in a doctrine of psychology as science of mental functions. It is not altogether easy to understand and to estimate this teaching because avowed functional psychologists use the term "mental function" in somewhat different senses. (1) Mental functions are perhaps most often described as "operations of consciousness,"¹⁰ "modes of mental action," "forms of mental process"—in the words of Stumpf's recent monograph, as "Akte, Zustände, Erlebnisse."¹¹ The pith of the distinction, as actually made, is usually the contrast drawn between the liveliness and concreteness of mental "function" as contrasted with the dead abstractness of the "idea," "presentation," or "content." This con-

¹⁰ "The Province of Functional Psychology," J. R. Angell, *Psychological Review*, Vol. XIV., pp. 63, 64 *et al.*

¹¹ "Erscheinungen und psychische Funktionen," reprinted, 1907, from the *Abhandlungen d. Kgl. preuss. Akad. d. Wissenschaften vom Jahre 1906*, p. 4 of the reprint. It is worthy of remark that Stumpf does not adopt the biological-teleological view of consciousness which the succeeding pages of this paper outline. Indeed, he explicitly disavows the conception of "function as part played with reference to reaching or maintaining an end." In brief, Stumpf teaches that psychology is concerned both with mental functions and with mental contents. (For a fuller account and a brief criticism of this "eclectic" position, cf. a forthcoming notice by the writer in the *Psychological Bulletin*.)

ception of consciousness as mental activity has been prevalent from the beginning in psychology,¹² but has most often been employed by writers who have alternated it, in misleading eclectic fashion, with the radically different view of consciousness as series of ideas.¹³

The most patent objection to the teaching is its indefiniteness, its lack of positive character. Consciousness, it declares, is activity, not static content. But—as so far outlined—the doctrine fails to distinguish psychic operations from activities of any other type. Accordingly, functional psychologists in increasing numbers have added definiteness to the teaching by (2) conceiving consciousness as reaction, that is, as activity-in-relation-to-environment.¹⁴ This is the prevalent biological conception in psychology according to which one regards “all our sensations, all our emotions and all our acts of will as so many expressions of organic adaptations to our environment.”¹⁵ Consciousness, from this point of view, is essentially a means of coping with one’s surroundings either through accommodation to them or through control of them. This environment may be conceived as physical, biological, or personal; but ordinarily less stress is laid on the personal environment.¹⁶ It should be carefully noted, in passing, that this functionalist doctrine of consciousness as reaction to environment by no means involves *identification* of consciousness with bodily reaction or attitude. It is true that certain functional psychologists make the identification, but nothing, in my opinion, is more prejudicial to functional psychology than this careless habit of defining consciousness in terms of motion—of describing perception, for example, not merely as a reaction to environment, but as “an essentially motor process.”¹⁷

The outline of the doctrine of the mental function is not, however, yet complete. The contemporary functional psychologist, not content with describing consciousness as reaction to environment, commonly (3) lays stress on the “value,” “meaning,” or “utility” of the reaction. From this point of view, functional psychology is

¹² Cf. Angell, “The Province of Functional Psychology,” *loc. cit.*, p. 63.

¹³ Cf. on this point my “An Introduction to Psychology,” pp. 445–446; “Der doppelte Standpunkt in der Psychologie,” p. 9.

¹⁴ Thorndike, “Elements of Psychology,” p. 113: “We could then say that the function of mental life was to be impressed by the environment and to associate suitable acts with all impressions”; and Judd, “Psychology, General Introduction,” pp. 131–132: “The function which a given sensation serves is . . . determined in large measure by the relation into which the sensation enters.”

¹⁵ Angell, “Psychology,” p. 7.

¹⁶ Angell and Judd, however, recognize the social environment of the self. Cf. Angell’s “Psychology,” p. 7; and Judd’s “Psychology, General Introduction,” pp. 310–311.

¹⁷ Felix Arnold, in a review of “Der doppelte Standpunkt in der Psychologie,” *Psychological Bulletin*, Vol. II., p. 372.

the science of "the fundamental utilities of consciousness";¹⁸ "the introduction of the functional standpoint is observation of an is-for";¹⁹ the important task of the psychologist is the discovery of the value of consciousness in delaying, controlling, or selecting. In a word, this teleological doctrine studies consciousness as an activity which furthers organic life.²⁰

It is evident from this outline that whereas most functional psychologists regard consciousness as helpful reaction to environment, all are united in conceiving it as activity, or mental operation. A just estimate of the functional theory must be based, therefore, on a valuation of this conception. But, narrowly scrutinized, the theory of psychology as science of mental activities turns out to be a needlessly abstract, an arbitrarily inadequate view. For activity is clearly a character of something. To call it relational activity and useful activity enlarges, but does not complete, the conception of it, since one inevitably and rightly asks concerning any character not only "of what sort is it?" but "whose is it?" Thus, one asks concerning an activity not only "what kind of activity?" but "activity, or function, of what?" In truth, the conception of mental activity requires the conception of mental actor, even more obviously than the full conception of the idea includes that of its possessor. Psychology as science of the mental function must, therefore, be fundamentally a science of the mental functioner.

As a matter of fact, functional psychologists have tacitly accepted this conclusion. Though they often define psychology as science of mental functions, operations, or activities, yet they refer, more or less explicitly, to that which functions, operates, or acts. Thus, Stout follows the definition of psychology as "positive science of mental process" by the question "What do we mean by 'mind'?"

¹⁸ Angell, "The Province of Functional Psychology," *loc. cit.*, p. 85. Cf. Judd, *op. cit.*, p. 131: "The function of a sensation can be defined only by considering the use to which the sensation is put."

¹⁹ Titchener, "Discussion," *Philosophical Review*, Vol. VIII., p. 291¹.

²⁰ If there were time, I should like to compare this outline of functional psychology with that of Angell in the address already cited on "The Province of Functional Psychology." In essentials, I think that my summary closely resembles his; and my only important objection to his view is to the following teaching: He asserts (*loc. cit.*, p. 67) that the "functional problem" is "concerned with discovering how and why conscious processes are what they are" and regards this conception of the functional doctrine as "substantially identical" with the conception of function as mental activity. But it seems to me obvious that these are, in no sense, identical conceptions; and that, indeed, the problem of the "how and why" is common to all forms of psychology. (For an assumption similar to Angell's, cf. Thorndike, "Elements of Psychology," p. 184¹).

and the statement "Mind exists, wherever consciousness exists";²¹ Thorndike defines dynamic, or functional, psychology as "the mind in action";²² Angell refers to consciousness as an "agent in the furtherance of the life activities of the organism,"²³ and Judd (as will later appear) explicitly conceives psychology as science of self.

There is, in truth, no way of combating this conclusion, except by arguing that a study of the actor or functioner, however necessarily implied by functional psychology, would be philosophical, not scientific, in character. But at least two distinctly scientific conceptions of the "mental functioner" are held by avowed functional psychologists. The first of these is the conception of the psychophysical organism, the complex of mind and body. Psychology, from this standpoint, is the study of the mental processes or functions of a being at once mental and physical. So far as I know, no one disputes that such a psychophysical organism is a proper object of scientific study. A second scientific conception of the conscious functioner, or actor, is as a self related to a physical organism, yet not constituting with it a single reality.

In the next paper of this series I shall try to elucidate and to compare these conceptions and to defend the scientific character of the second. The aim of this section has been to show that psychology, in so far as it is the science of mental function, is necessarily and more fundamentally the science of the mental functioner.

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REALISM AND THE PHYSICAL WORLD

OPponents of realism have for centuries urged that the subjectivity of that of which we are aware in sense experience is proved by the fact that our *sensa* vary according to the conditions of the physiological organism. These *sensa* can not be qualities of independent objects, it is argued, unless the independent objects are supposed to change with every change in our experience of them, or unless they be considered as the hospitable asylums of all contradictions that are banished from the domain of any single experi-

²¹ "Analytic Psychology," Chap. I., § 1, p. 1. Stout, however, does not, so far as I know, use the expression "functional psychology" in describing his system.

²² "Elements of Psychology," p. 184 and note.

²³ Decennial Publications of the University of Chicago, First Series, III, Part II., p. 64. Cf. the reference of Professor Mead to the "I" or "subject" in "The Definition of the Psychical," *ibid.*, Part II., pp. 104 ff. Cf., also, the reference to "the self" in Dr. F. Arnold's analysis of interest, *Psychological Bulletin*, Vol. II., p. 364³.