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Behavior and the Concept of Mental Disease

John B. Watson

For some years I have been attempting to understand the physician's concept of mental disease. Not long ago I had the pleasure of attending a medical meeting and of listening to a physician who has been very successful in his treatment of neurasthenia. Several cases of neurasthenia were described. Since none of the patients showed general organic disturbances of a serious kind and since all of the neurological tests showed normal functioning of the reflexes of the central nervous system, the physician concluded that the disease was "purely mental." He then began to describe the condition of such a patient's ego -- the general content of consciousness, the inward reference of attention, and the peculiarities of the field of attention. At the end of his discourse two or three eminent physicians stated their satisfaction that the speaker had been willing to come out clearly and say that the disease was "*mental*." In other words, they expressed their approval of the fact that the speaker did not, in functional nervous cases, deem it necessary to find lesions in the central nervous system or even a toxic condition of the nervous system before admitting that the patient had a disease.

Being the only psychologist present, I did not like to admit that I did not understand the physician's use of the term "mental." (I do not wish by this assertion to stir up strife or bitter argument, but rather to confess ignorance on my own part and to seek for some common ground of discussion.) As a sequel to this meeting I began to attempt to formulate my own ideas as to the terminology I should use in describing a mental disease. I think that at the outset I should admit that I know a good deal more about terminology than I know about diseases of any kind. I am strengthened in this attempt to give my concept of mental diseases by the difficulty I have had in understanding the terminology (involving throughout and often transcending the current concept of consciousness) of the psychoanalytic movement.

I have been for some years an earnest student of Freud (and other psychoanalysts), but the further I go into their terminology the more sure I am that there is a simpler and a more common-sense way (and at the same time a more scientific way) of describing the essential factors in their theory. I am convinced of the truth of Freud's work, but as I teach the Freudian movement to my classes I drop out the crude vitalistic and psychological terminology, and stick to what I believe to be the biological factors involved in his theories (Freud himself admits the possibility of this). The central truth that I think Freud has given us is that *youthful*, *outgrown*, *and partially discarded habit and instinctive systems of reaction can and possibly always do influence the functioning of our adult systems of*

reactions, and influence to a certain extent even the possibility of our forming the new habit systems which we must reasonably be expected to form.

To my students in psychology I usually introduce the habit terminology somewhat as follows:

Long before Freud's doctrine saw the light of day William James gave the key to what I believe to be the true explanation of the wish. Thirty years ago he wrote: ". . . I am often confronted by the necessity of standing by one of my selves and relinquishing the rest. Not that I would not, if I could, be both handsome and fat and well dressed, and a great athlete, and make a million a year, be a wit, a *bon-vivant*, and a lady-killer, as well as a philosopher, a philanthropist, a statesman, a warrior, and African explorer, as well as a 'tone-poet,' and a saint. But the thing is simply impossible. The millionaire's work would run counter to the saint's; the *bon-vivant* and the philanthropist would trip each other up; the philosopher and the lady-killer could not well keep house in the same tenement of clay. Such different characteristics may conceivably at the outset of life be alike *possible* to a man. But to make any one of them actual, the rest must more or less be suppressed."

What James is particularly emphasizing here is that the human organism is instinctively capable of developing along many different lines, but that due to the stress of civilization some of these instinctive capabilities must be thwarted. In addition to these impulses which are instinctive and therefore hereditary, there are many habit impulses which are equally strong and which for similar reasons must be given up. The systems of habits we form, *i.e*., the acts we *learn* to perform, at four years of age will not serve us when we are twelve, and those formed at the age of twelve will not serve us when we become adults. As we pass from childhood to man's estate we are constantly giving up thousands of activities which our nervous and muscular systems have learned to perform and which they still have a tendency to perform. Some of the instinctive tendencies born with us are poor heritages; some of the habits we early develop are equally poor possessions. But whether they are "good" or "bad" they must give way as we put on the habits required of adults. Some of them yield with difficulty and we often get badly twisted in attempting to put them away, as every psychiatric clinic can testify.[1]

I then try to show that such habit systems need never have been "conscious" (and here all I mean by being "conscious" -- and all I believe the psychopathologists mean by it -- is that *the patient can not phrase in terms of words the habit twists which have become a part of his biological equipment*). The implication is clear that in the psychoneuroses I should look for *habit disturbances* -- maladjustments -- and should attempt to describe my findings in terms of the inadequacy of responses, of wrong responses, and of the complete lack of

responses to the objects and situations in the daily life of the patient. I should likewise attempt to trace out the original conditions leading maladjustment and the causes leading to its continuation. To these statements most psychopathologists will subscribe, but most of them will insist that maladjustments can not be state wholly in behavior terms. It is just here that I think my difficulty in understanding the psychiatrist's position begins. I believe that the description of "mental" cases can be completed as well as begun in behavior terms.

I think the chief difficulty in completing the description in terms of the every-day language of habit formation lies in our failure to look upon *language* (the patient's here) as being only a system of motor habits. As a short cut -- a system of economy -- the human animal has formed a system of language habits (spoken words, inner speech, etc.). These language habits are built up from and always correspond more or less closely to the general system of bodily habits (I contrast here for convenience of expression *language habits* and *bodily habits*) such as the eye-hand, ear-hand, etc., systems of coordination and their complex integrations. This general correspondence between language and bodily habits is shown clearly in the football field, where we see the player making a complex series of movements and later hear him stating in words what systems of plays he employed; and in the case where we hear a man tell us what acts he is going to perform on a horizontal bar and later see him executing these acts. Words have grown up around motor acts and have no functional significance apart from their connection with motor acts. I have come recently to the view that speech should be looked upon as a vast system of *conditioned reflexes*. In a previous paper[2] I sketched the method of establishing motor and secretory conditioned reflexes. As Pawlow and Bechterew have shown, the central feature of the method consists in the fact that almost any stimulus can, under suitable conditions, *be substituted for another stimulus* which has a very definite act of its own as a consequence. An electric contact applied to the sole of the foot will produce a defensive reflex -- a jerking up of the foot. A monochromatic light produces no such effect. If, however, the light is allowed to fall upon the retina of the eye at the moment the foot is stimulated electrically, we will (after repetition) bring about a condition such that the light alone will produce the defensive reaction of the foot. Words as words are learned largely by imitation, but words receive their standing as functional units in integrated habit systems by virtue of the fact that they become *substitutable for the stimulus which originally initiated an act*. A simple illustration will possibly serve to make clear my point. The cold air from an open window leads a child who has gone to bed to draw up the covers. The words of the nurse "cover up, dear" will lead to the same act. Of course in habit systems as complex as those in speech, words get further and further divorced from the original stimuli for which they were substituted (*i.e.*, from the original integrations in which they first played a part.) The final test of all words, however, is the question whether they can stand adequately (be substituted) for acts. We often see an instructor despair of telling a student in words how to conduct an experiment.

He then resorts to acts and goes through the experiment for the student. Our words thus stand as a kind of shorthand sketch of our repertoire of acts and motor attitudes.

I have developed these points at length because a great many of the symptoms of so-called mental cases consist in disturbances of speech functions -- in maladjustments of that nice balance which should exist between speech acts and bodily acts (and, perhaps even more, disturbances among the "speech functions" themselves). For fear that I may be misunderstood in my use of the term "disturbance" of speech I wish to say that I have no reference here to aphasia. I mean, among other things, by speech disturbance what the Freudian means: For example, in the manifest content of dreams one finds new words, misplacement of words, condensation of words, etc.; and in the association test the failure of words and an increased reaction time between stimulus word and response. These are speech disturbances and hence *habit disturbances*, exactly on a par with the paralysis of arm or leg in hysteria, defensive reactions, compensatory reactions, and the like. All such disturbances of habit -- superfluous and useless conditioned reflexes -- may be found to date back to some primary stimulus (possibly to sex trauma, exposure,[3] masturbation, etc., in childhood) which is the conditioning cause operating just as the electric shock given jointly with a visual stimulus operates in forcing the visual stimulus finally to release a group of responses which, until the current was applied, brought none of them.

Motor tics, the seeming paralysis in hysteria, etc., are to be envisaged in the same way; as types of conditioned reflexes, which are no more wonderful and no less wonderful than the cases in the laboratory where the sound of a bell does not at first cause a subject to jerk back his arm, but which later comes to do it after we have jointly stimulated the hand with an electric current and the ear with the bell. Nor will the objection hold that conditioned reflexes arise only in the laboratory. Dr. Lashley has shown that numerous such conditioned reflexes exist in the functioning of the parotid gland in man, and that these reflexes arise in the regular course of daily activity. So pronounced are they that a subject can not very well experiment upon himself. If he reaches forward to get a pipette full of acid to test its effect in increasing the activity of the gland, the gland begins to function as he reaches for the acid. Now if conditioned reflexes can arise in the salivary gland, they can and possibly do arise in all glandular and muscular portions of the body. The possibility that tics and hysterical manifestations generally arise in this way is very great. It seems to me to be the only biological formulation possible in the present state of our knowledge.

Is it not simpler, then, to look upon all such manifestations as special forms of conditioned reflexes? As long as they do not disturb the subject's ordinary reactions to the objects around him, we do not class the patient as being "mentally" disturbed (as in the psychopathological disturbances we see in daily life); the moment, however, that an arm is

incapacitated or the glandular and muscular elements of the sex organs become involved we must take notice of such grave disturbances and try to see what can be done. If now we can take what appears to me to be a sensible point of view about language habits ("thought") and come to look upon them as obeying the laws of all other habits, and describe our patient's symptoms wholly in terms of habit disturbance, and trace the conditions which have led to the disturbance, we shall have come a long way. We could throw over bodily the enormous and burdensome terminology of a description in terms of consciousness -- disturbances of the affections, misplacement or withdrawal of the libido (a concept which, in Jung's latest book on the "Subconscious," has become the equivalent of Driesch's entelechy), repressions into the subconscious, and the like.

I think I can illustrate what I mean by describing a hypothetical "neurasthenic dog." Suppose I take a dog to a canine psychiatric clinic and tell the physician nothing about the dog's previous history. The physician puts the dog through a searching neurological examination, makes a thorough test of heart action, examines the urine, etc. Absolutely no pathological disturbances are found. He finds, however, on testing the dog's reactions to his normal canine environment that there are serious functional disturbances. When the normal dog sees a piece of red meat, he snaps at it. The "neurasthenic" dog, however, lies down and becomes absolutely motionless. When brought near a female of his own kind, far from exhibiting the usual reactions, he begins to shed tears. When spoken to in gentle tones, he hangs his head, puts his tail between his legs, but when spoken to gruffly he brightens up and lifts his head and licks the speaker's hand. When preparing to sleep, instead of turning round and round and lying down with anterior and posterior ends in close relations, the dog jumps up and down and finally lies down on his back with his paws pointing to the stars. The physician surely finds here serious conflict with reality and a woeful lack of normal compensations. But since there are no organic pathological disturbances, the physician diagnoses the case as neurasthenia with compulsion neurosis -- the disease is mental.

When I come to the clinic and see the physician and talk with him I explain that there is no need to introduce any concept of the "mental," I tell him that I have *trained the dog* during the past five years to do just these things. The trouble with the dog is that his habits are twisted. Now if I had started with a dog whose instinctive reaction systems were (possibly) perverted in the beginning (heredity) and I had superposed in addition the above bizarre group of habit reactions, he would seem a pitiful object indeed when trying to cope with his environment.

Now as to the cure of the dog. I should begin step by step to *retrain* the dog along lines which would make him better fitted to cope with his environment. If there were sufficient

plasticity left I should undertake it with a good deal of hope. The length of time required for the cure and the rapidity of the cure would depend upon several factors -- such as my luck in fixing upon just the right method for breaking up the old non-serviceable habits, the length of time the old habits had been in force, upon the tractability of the dog, etc.

If I understand their teachings, this cure which I suggest is the keynote of the work of the psychopathologists. It is certainly that of Adolf Meyer. I doubt if Dr. Meyer will go as far as I do in holding that the time has already come for describing "mental diseases" wholly in terms of twisted habits, and yet it was a conversation which I had with him three or four years ago that first led me to think over functional nervous cases in this way. Nor can I see where the straight Freudian adherents can have any cause for complaint. Every psychopathologist begins with a conversation with his patient. In the conversation certain words begin to give indications of the "complex" (maladjustment). The habit twist is made still clearer by the results of tests with the word-association method, by the analysis of the patient's dreams, by inference, and by common-sense observations. In course of time the maladjustment is completely located, and its origin, development, and consequences are fully traced. Now during the process of study, the patient's reeducation (usually, but not necessarily, along sex lines) has already begun. In fact it began the moment the physician secured sufficient acquaintance with the patient to begin analysis. (Brill states that he will not attempt analysis until he has known the patient for at least a week.)

Several psychopathologists have thought that the objective methods and terminology which we have sought to introduce would necessarily do away with conversation with the patient. This is not true. Speech is just as objective as tennis-playing or any other muscular act and should be looked upon in just as objective a way. The difficulty has been that instead of looking at speech as at other muscular acts, we have looked upon it as a revealer of "thought" -- the sacred inner secret of the "mind." Now in testing out a neurasthenic patient one of the first things we do is to find out what disturbances there are in the movements of hands, arms, and body as a whole. We watch and describe them in wholly objective ways. Is it not possible to look upon speech disturbances in just such an objective way and see in them merely signals which will lead us to the disturbed systems of bodily integrations? In a particular case we may find (without admitting that we must find it so) that the speech defects point to the "incest complex" in one form or another. The faulty and unwise behavior of a mother has led the boy to react to her in many particulars as does her husband. Such a group of integrations on the boy's part seriously disturbs the forming of suitable boyish habits and may bring in its train a vast series of conditioned reflexes which may show themselves in general bodily disturbances, such as ties, paralysis, etc., or in speech defects, such as failures in word responses, lengthened reaction time, etc.

My thesis so far has concerned itself with *motor habits*. The muscles form only a part of the total reaction system. Every motor reaction calls for a simultaneous response in the glandular system (corresponding in part at least to the *affective values* of the psychologists and psychopathologists). Now the chief symptom in many cases of mental disease is the disturbance of "affective values" (withdrawal of the libido, etc.) It is to take account of this puzzling transfer that has led the Freudian school to speak as though the "affective process" could be disembodied from any particular response and hang suspended as it were in mid-air[4] (the "subconscious" is introduced here by Freud). From time to time, to be sure, it attaches itself to certain responses, but these responses may bear no relation to the original stimulus which called it forth.

The modern notion of emotional[5] reactions calls first for the presence of an emotionally exciting stimulus, which will, through hereditary mechanisms, excite neural arcs leading through the central and the autonomic systems, finally arousing activity in the glands -- especially in the ductless glands. The latter then set free certain substances, *e*. *g*., adrenin, among other things, which, on getting into the blood, continue the emotional activity just as though the original stimulus were present. As I view the matter we have here just the situation for arousing *conditioned emotional reflexes*. Any stimulus (non-emotional) which immediately (or shortly) follows an emotionally exciting stimulus produces its motor reaction before the emotional effects of the original stimulus have died down. A transfer (conditioned reflex) takes place (after many such occurrences) so that in the end the second stimulus produces in its train now not only its proper group of motor integrations, but an emotional set which *belonged originally to another stimulus*. To apply this in detail in functional cases oversteps my ability as well as my present interests. At any rate the suggestion seems to me to give a reasonable clue as to the way in which such shifts in the emotional constituents of a total integration can occur. Surely it is better to use even this crude formulation than to describe the phenomenon as is done in the current psychoanalytic treatises. What is simpler than to speak of a transferred or conditioned emotional response, giving both the object (or situation) which originally called out the emotional response and the object (or situation) to which it was transferred?

In conclusion I wish to say that I am not attempting to launch criticisms at the head of the psychopathologist. If his terminology is involved it is the fault really of psychology, since he perforce had to use the concepts which psychology had developed. I have tried in this paper merely to raise the question whether the psychopathologist can not reshape to some extent his formulation of problems (without doing injustice to the patient) so as to avail himself of biological and behavioristic concepts.

Psychological terminology is, I believe, being fast outgrown. Dunlap's recent inquiry[6] into the definitions of psychological terms shows, I believe, more clearly than I can state, just how little agreement there is among psychologists in the use of common psychological terms. It seems to me to be a mistake for as useful and fascinating a growth as psychopathology to allow itself to become encrusted with the barnacles of an outgrown terminology.

Footnotes

1. From a written but unpublished lecture.
2. "The Place of the Conditioned Reflex in Psychology," *Psychological Review*, March, 1916.
3. I believe it takes more than a single shock or disturbance to bring such conditional reflexes in its train. Usually I believe it is a long-continued struggle with environment which brings them.
4. I quote from Ernest Jones who is interpreting Freud's theory of affective processes: "Most significant, however, is the assumption that it has a certain autonomy, so that it can become released from the idea to which it was primarily attached, thus entering into new psychical systems and producing widespread effects. This displacement of affect from one idea to another Freud denotes as transference (*Uebertragung*), and says that the second idea may in a sense be termed a representative of the first. A simple illustration of the process is when a girl transfers the affective process properly belonging to a baby to that of a doll, and even takes it to bed with her and makes attempts to feed it, thus treating it in all possible respects as she would a baby." Papers on Psycho-Analysis.
5. I prefer to keep the term "emotion" in objective psychology. I, however, throw away all of the conscious implications. To me an emotion is a bodily state which can be observed in man and animal equally well, such as the bristling of hair, shedding of tears, increase or decrease in respiration, sighing, heightened muscular activity, and the like. Some day we shall be able to mark off these objective states and classify them with respect to the types of stimuli which call them out (sex, food, shelter, noxious odors, etc.).
6. Knight Dunlap, "The Results of a Questionary on Psychological Terminology," *Johns Hopkins Circular*, 1916, No. 5.