The Place of Operant Conditioning of Verbal Behavior in Psychotherapy

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The fact that psychotherapy involves learning has become a truism. It has become widely accepted, even by psychodynamic therapists, in large measure due to such hybrid psychologists (hybrid because their writings are based on both learning theory and psychodynamic psychotherapy) as Dollard and Miller (1950), Mowrer (1953), and Shoben (1949). Important as was the contribution of these psychologists to learning theory, however, close inspection of the bridge they built between learning theory and psychodynamic therapy shows that it is strictly one way. They began by accepting the psychoanalytic terms describing the course of psychotherapy and then directed most of their energies toward finding analogies in the animal learning literature. The acceptance of learning theory by the conventional psychotherapist thus turned out to be a Pyrrhic victory for behavior theorists. Acceptance merely gave conventional psychotherapists still another reason for continuing what they were doing already. It is therefore no wonder that learning theory had no impact upon psychotherapy until techniques derived from the former were applied directly and independently of conventional therapy to the psychopathology itself. Outside the United States this took the form of applying Pavlovian (respondent) conditioning (Eysenck, 1960; Wolpe, 1958). In this country it consisted primarily in the application of operant conditioning. The major impetus for applying operant conditioning came, perhaps predictably, from the descriptive behaviorism of Skinner (1938, 1953, 1957; Ferster & Skinner, 1957; Holland & Skinner, 1961) and Keller and Schoenfeld (1950) who did so much to promote and extend it. It should come as no surprise that the seemingly antithetical approach to psychodynamics should lend itself to therapeutic purposes when one remembers that descriptive behaviorism, much more than Hull, Guthrie, or Tolman, concentrated on the study of the individual organism, the sine qua non of clinical practice. The success and vitality of this approach has shown itself in a series of books (Honig, 1966; Krasner & Ullmann, 1965; Millenson, 1967; Sidman, 1960; Staats, 1964; Staats & Staats, 1963; Ullmann & Krasner, 1965; Ulrich, Stachnik & Mabry, 1966; Verhave, 1966) and in a major journal (Journal of the Experimental Analysis of Behavior). Descriptive behaviorism has come a long way since Skinner's (1938) initial work on the laboratory rat in his Behavior of Organisms. Even superficial inspection of the literature today shows that this approach to psychology has now not only been extrapolated but, even more important, widely applied to human subjects.

The aim of this chapter is to show in what way descriptive behaviorism can be utilized in the analysis and control of the verbal behavior emitted during the course of psychotherapy, the conduct of which is purportedly determined by different models for bringing about change in a patient.
Before pursuing the above stated aim, it might be well to delineate the scope of this chapter, and give the reasons for including the material found here. At first glance, one is inclined to think that verbal behavior, no less operant conditioning of verbal behavior, is important only in conventional psychotherapy. However, it plays a critical role in the newer types of behavior therapy as well. Moreover, it tends to be ignored as much in the one type of therapy as in the other.

Conventional Psychotherapy

Let us look first at conventional psychotherapy. The many studies in the conditioning of verbal behavior, which were most recently stimulated by Greenspoon's (1955) experiment on the conditioning of plural nouns, have, in large measure, addressed themselves to the problem of setting up a model for conventional psychotherapy. Essentially these studies have given rise to two inferences: First, the verbal behavior of the therapist influences the verbal behavior of the patient so as to make questionable the validity of the information obtained from the latter. This means that under the typically uncontrolled conditions of conventional psychotherapy one can never be certain of a patient's report about his state, whether subjective or objective. Thus it becomes difficult to use the psychotherapeutic interview to evaluate either a patient or a theory of personality or treatment. The second inference from the verbal conditioning literature is that the therapist who is interested in modifying the verbal behavior of his patient now has available to him reliable and well-tested techniques to bring this about. We now have the means for putting the effectiveness of conventional psychotherapy to empirical test in a more detailed and therefore more useful way. A patient whose verbal behavior has not changed (has not been conditioned) during the course of conventional psychotherapy would certainly not be expected to change his verbal and nonverbal behavior outside the therapy session. For example, one can test the hypothesis, generated by a certain school of psychotherapy, that a patient must learn to label his emotional responses accurately (Dollard and Miller, 1950). Although we now have available conditioning techniques for instating such labels, such techniques have not yet been incorporated in actual therapeutic practice.

In a recent paper, Kanfer (1966, p. 173) expresses a note of pessimism, saying "In contrast to the wealth of information available in the literature [of verbal conditioning], the behavior of interviewing therapists and the format of interview therapy seems to be essentially unaffected by these findings and continues to follow closely the framework of the traditional dynamic theories of personality." Kanfer goes on to say that extensive application of the results of studies on the operant conditioning of verbal behavior will be made only when behavior theory provides more concrete guidelines to the general strategy in psychotherapy. It is hoped that this chapter will move us along the way, but that if we do not get to ultimate goal of a general strategy immediately, conventional therapists will still be willing to try these techniques which are well worked out.

Lack of planning or, in the vocabulary of behavior theory, lack of programming, gives rise to important consequences for conventional therapy. Reinforcement in interaction between two or more people is not something which can be laid aside to be used only when one wishes. Reinforcers form a very important aspect of any conversation; their presence maintains it and their absence terminates it. What are the implications of the abnegation of the use of reinforcement? It means that the control over the omission of reinforcers becomes unknown. It has been suggested by some that under these conditions the distribution of reinforcers is random and can therefore be ignored. That
reinforcers are not distributed at random under such conditions will be demonstrated below, but in point of fact there is very little evidence that any verbal behavior is really random. There are, after all, many response biases which all of us learn and there are a great many determinants of verbal behavior as the literature on verbal behavior well demonstrates (Salzinger & Salzinger, 1967). Thus, some of the determinants of the interviewer's reinforcing behavior reside in his own reinforcement history (how he was conditioned to reinforce others), and some of the determinants reside in the behavior of the patient, i.e., in the discriminative stimuli and reinforcers he emits, whose behavior the therapist is in fact trying to change. A recent study by Heller, Myers, and Kline (1963), although not based upon behavior theory, investigated the effect of different kinds of client behavior upon interviewer behavior and found it to be significant. They concluded that both interviewer and client "are variable responders, each alert to the incoming cues from the other and each in turn acting as a partial cause of the other's behavior." (Heller et al. 1963, p. 121).

The importance of planning therapy sessions stems from other considerations as well. Some time ago this author reviewed the interview literature (Salzinger, 1959a) and pointed out the many sources of distortion of the information given him by the patient, i.e., distortion arising as distinct from the way in which the interviewer questions and reinforces the patient, as well as distortion occurring as an integral part of the interviewing procedure. Looking upon the interviewer-patient interaction as a communication system, a list of 5 potential filters and noise generators was postulated: The process of observation, i.e., to what the interviewer remembers of the interview; record, i.e., what the interviewer attends when he listens to his patient; the memory process, i.e., what the interviewer remembers of the interview; the process of recording, i.e., what the interviewer considers important enough to write down; method of analysis, i.e., how he combines his information; and finally, summarizing measure, i.e., how he labels the combined information in a diagnostic category, prescription for treatment, etc. These filters and noise generators function in terms explainable by behavior theory, since the behaviors of observing, remembering, recording, and synthesizing of information are also susceptible to reinforcement contingencies. Thus, with regard to observation, Holland (1958) showed that meter-monitoring behavior is controlled by the number and pattern of significant meter deflections observed, i.e., the observed event controlled the act of observing and therefore what the subject would observe next. Another study of interest with respect to errors in observation was carried out by Chapman (1967). Allowing subjects to observe the co-occurrence of various pairs of words, he presented them in such a way that each pair occurred one third of the time. When the subjects were later asked to estimate how frequently the various pairs occurred, they overestimated the co-occurrence of words which had strong associative connection and, perhaps even more interesting, they overestimated the co-occurrence of words which had in common only the fact that both members of the pair were distinctive in the series. Along similar lines, Goldiamond and Hawkins (1958) showed that "perception can be explained completely in terms of response bias (number of superliminal exposures to a given stimulus before being asked to guess what one sees) when no relevant stimulus is shown. Finally, Portnoy, Portnoy and Salzinger (1964) showed that association value of a verbal stimulus determines search time even when response bias is effectively ruled out, thus showing that even when a stimulus is clearly there to be observed, past experience with that stimulus influences its rate of detection. The potential difficulties inherent in obtaining and retaining information on the basis of interviewing make the planning of its conduct even more important and provide an additional reason for the behavior therapist's distrust of the technique.
What, then, is the fatal fascination that the interview has for the conventional psychotherapist? If we discard the fact that he is simply used to it as a way of dealing with patients, we are left with one significant argument for the interview and that is its value in evoking the patient's subjective experiences. Put into somewhat different terms, the conventional therapist embraces the interview because it allows him to evoke and evaluate the patient's reactions to private events, where a private event may be defined as a stimulus to which one person only can be exposed at a given time.

Private events which conventional therapists find so important in their work are very difficult to get at, both because of their nature (the fact that only one person is exposed to a private event), and because of the many possibilities for different reinforcement contingencies acting upon these verbal responses (Skinner, 1945). Although no specific comparative studies have been undertaken comparing the conditionability of verbal response classes under the control of private and public stimuli, related investigations would seem to indicate that conditionability of verbal responses under the control of private stimuli would be more influenced than those under the control of public stimuli. Judgments of extent of movement in the experiment with the autokinetic effect (a private event) appear to be more easily modified by the judgments of a fellow observer (Sherif, 1935) than the judgments of which of 3 obviously different size lines is largest (Asch, 1952). This difference in susceptibility to influence has two implications. One is that responses ostensibly under the control of private events should be used as sources of information only if additional corroborative evidence is available and if the reinforcement conditions surrounding the evocation of the responses are known. The other implication is that if the conventional psychotherapist wants to modify such responses, he could not have selected a happier response class.

It should have become clear by now that there are both strategic (effective therapeutic techniques) and methodological (reliable techniques for obtaining information) reasons for applying descriptive behaviorism to conventional psychotherapy. There are negative reasons which motivate the application of a new model to conventional psychotherapy and we will present these briefly now.

The foremost reason for re-evaluating conventional psychotherapy is of course the fact that its effectiveness is equivocal (Eysenck, 1952, 1960; Levitt, 1957, 1963).

Another reason for re-evaluating conventional psychotherapy is that the typical psychodynamic terms are simply inappropriate for description of what goes on in the course of psychotherapy. As Haley (1963) recently pointed out, "A problem in describing psychoanalysis, as well as other schools of psychotherapy, is the fact that reports of therapists emphasize the theory of a school rather than what actually happens between therapist and patient." (Haley, 1963, p. 69). He points out that the typical psychodynamic ideas of repression, orthality, ego, oedipal conflict, etc., cannot possibly form the basis for describing patient-therapist interactions. He further takes nondirective therapy to task by saying the following (Haley, 1963, p. 71): "To state that any communication between two people can be nondirective is to state an impossibility."
Bandura and Walters (1963) have made an additional criticism of conventional psychotherapy by pointing out that attempts to modify deviant behavior have been based on the school of the particular therapist rather than on the problem of the patient. Bandura and Walters (1963, p. 249) state: "School affiliations not only determine the range of techniques of psychotherapy that a given therapist will employ but even define the client's central conflict or disturbance that the techniques of the school are designed to resolve."

Behavior Therapy - Pavlovian Type

Although it has been suggested by behavior therapists that conventional psychotherapy is all talk, while behavior therapy deals directly with pathology, behavior therapy too involves talk. As Mowrer (1965) recently pointed out, it, like conventional psychotherapy, is based upon the notion that to remove abnormal behavior, one must remove underlying emotions. Wolpe (1958) states that improvement in the course of conventional psychotherapy must be attributed to the interviewer's eliciting an emotional response from the patient which is antagonistic to anxiety and strong enough to inhibit it. The technique most frequently used for that purpose in behavior therapy is Wolpe's (1958) systematic desensitization procedure.

Let us look more closely at the procedure. Verbal behavior first comes into the inquiry which is designed to establish one or more anxiety hierarchies. These hierarchies consist of the verbal responses to the private event of feelings of anxiety. Later when the behavior therapist presents parts of the anxiety hierarchy as scenes, public stimuli are presented as private events. Presumably, to the extent that the private events of a given patient differ radically from the public events in his hierarchy, to that extent this kind of therapy is ineffective for him. At this stage, the patient's verbal responses are responses to the private event of anxiety evoked by the private event (the scene conjured up by the therapist) for the patient to imagine. Presumably part of what the patient does is to respond subvocally to the therapist's injunction to imagine a given scene. The fact that a patient's verbal response is not always under the control of his private events was reported in at least one study (Lazarus, Davison & Polefka, 1965, p. 226) where "it was obvious that his (the patient's) verbal reports were aimed at eliciting approval rather than describing his true feelings."

One of the important classes of behavior which the therapist must successfully train the patient to emit is self-regulative behavior. The patient has to learn to associate to the stimuli presented to him by the therapist and to cease associating to them when told to stop. One would certainly think that here might well be a place for the operant conditioning of verbal behavior paradigm. Is it possible that what Wolpe calls a Pavlovian conditioning design is in fact an operant conditioning design? Wolpe's interpretation of the systematic desensitization procedure is that the therapist presents stimuli which are gradually increasingly more like the anxiety eliciting stimulus, with each successive stimulus having part of that anxiety inhibited by relaxation. Essentially this process depends on stimulus generalization. But is it not possible to view this procedure as being dependent on response generalization in an operant conditioning paradigm, whereby the patient is positively reinforced by feeling relaxed and by the verbal and nonverbal approval of the therapist to think of responses more and more like the response he fears to make? We are not suggesting that the autonomic nervous system is not involved in the procedure. We know, however, that muscle relaxation can be produced directly by
means of operant conditioning. We know also that response generalization is used in the process of shaping responses not yet in the repertory of an organism. The procedure of shaping has an uncanny similarity to the systematic desensitization procedure. Simply substitute response for stimulus. Both procedures are gradual ones, and in both, the organism emits a response he did not emit before.

In an experiment (Salzinger, Feldman, Cowan & Salzinger, 1965) with a speech deficient boy who was afraid to leave the ward to come into the experimental room, an operant conditioning procedure was used to shape the response of getting him ever closer to the feared room. A very important aspect of the reinforcer consisted of terminating the progress toward the feared room once the child had approached it somewhat. Thus, approach to the room was reinforced by candy (delivery of positive reinforcement) and by allowing him to return to the ward (termination of mildly negative reinforcement). When the child finally ventured into the experimental room he was allowed to pick up a piece of candy on the table and immediately to leave the room and return to the ward. Is it possible that the procedure in which the behavior therapist presents the patient with a neutral or relaxing scene acts the same way as allowing the boy to leave the feared experimental room? Is the act of change in the patient's verbal behavior from aversive to neutral responses reinforcing?

It is of some interest to note that there are dangers in shaping procedures. It is possible to reinforce, and therefore to condition, behavior which might be directly opposed to the desired behavior; it is therefore important to know which kind of behavior will turn into what other behavior before reinforcing it. Another danger in a shaping procedure consists of reinforcing a given response which, though it is not initially incompatible with the desired response, might become so because it has been reinforced too often. This implies that to the extent that systematic desensitization is an operant conditioning situation, too large a number of presentations of a given scene might be deleterious to the therapeutic process; to the extent that it is a respondent conditioning process, a large number of presentations of the same scene should have no deleterious effect. Thus we have here a possible experiment to test which of the two types of conditioning better describes the process.

What of the role of the relaxation procedure? Hefferline (1962) has suggested that the differential activity of muscles may act as a controlling stimulus for the so-called higher mental processes. Is it possible that the proprioceptive stimulation stemming from the normal but non-relaxed state controls responses incompatible with the ones the therapist is trying to evoke, while the proprioceptive stimulation coming from the relaxed state of the muscles has no such controlling stimulus function? In other words, we are suggesting that the relaxed state of the muscles offers the patient the opportunity to emit responses he does not ordinarily emit and which would otherwise be difficult to instate. Certainly, the procedure of training assertive behavior is a case of operant conditioning. Here therapist and patient go through role playing such that the patient's assertive verbal behavior is positively reinforced by the therapist in order to transfer the increased frequency of it in one stimulus situation, where it can easily occur, to another stimulus situation where its probability of occurrence is initially low. It seems reasonable to consider that behavior therapy à la Wolpe is very much an overlap situation where both kinds of conditioning take place and that the therapist should pay more explicit attention to both types of conditioning so as to use both to better advantage.
Let us look at two studies where operant and respondent conditioning procedures were combined in an explicit way. Lazarus, Davison and Polefka (1965) found it necessary to reinforce certain operant behavior, namely, going to school, while carrying out extinction of anxiety along classical conditioning lines. Although the operant conditioning was mainly of nonverbal behavior, this experiment showed quite clearly the benefits which could accrue from the combination of the two conditioning procedures. Schmidt (1964) combined three behavior modification procedures: the operant conditioning of verbal behavior, the operant conditioning of nonverbal behavior, and Wolpe's systematic desensitization procedure in vivo. Although Schmidt used only one patient in her experiment, her experimental design, which included well thought out controls, along with her results require that this study be generally read, and replicated on a sample of other patients. Taking one of two series of anxiety provoking situations, she designed a verbal conditioning task for it, followed by the desensitization in vivo procedure. Then she took the other, matched, series of anxiety provoking situations and subjected it only to in vivo desensitization. Her verbal conditioning procedure included a shaping technique which specified that the patient be reinforced for statements gradually expressing less anxiety. The statements varying in degree of anxiety were made up by the patient himself under the therapist's instruction, and were then typed on 75 cards. The patient's task was to select one of 4 statements about a given anxiety stimulus (e.g., a bus), with the statements varying in degree from great anxiety to feeling of ease. This verbal conditioning procedure (verbal reinforcers were successfully employed under some conditions, nonverbal ones under others, but the former were more effective) was continued until the patient chose the "recovery" (feeling at ease) statement for every one of the 75 cards. Although significant conditioning effects were obtained, subjective evaluation by the patient of the original anxiety provoking situations after conditioning showed no statistically significant change from the pre-conditioning evaluation. The actual behavior shaping procedure (desensitization) was then instituted for all anxiety hierarchies with the result that those anxiety hierarchies which were preceded by the verbal conditioning procedure required a mean of 4 hours for successful treatment, while those hierarchies not so preceded required a mean of 7 hours for successful treatment. To take one example, the effectiveness of the verbal conditioning procedure with statements about the bus showed itself by requiring fewer nonverbal behavior shaping sessions for the patient to be able to travel on a bus without fear. Furthermore, the subjective evaluation by the patient showed a greater effect of the nonverbal behavior sessions in reducing the anxiety when the nonverbal behavior conditioning was preceded by verbal conditioning. Finally, follow-up one year after treatment showed that those anxiety hierarchies treated by both conditioning procedures elicited significantly less anxiety than before treatment while those hierarchies treated by conditioning nonverbal behavior only elicited the same amount of anxiety as before treatment. The author summarizes part of her findings (Schmidt, 1963, p. 26) by stating "that though verbal conditioning cannot produce behavioral changes it may facilitate their induction by other methods and their maintenance." Here, then, is an example of how a focussed verbal conditioning procedure by itself, i.e., without an equally focussed nonverbal conditioning procedure, is unsuccessful in producing a behavioral change. This can be taken to be analogous to current conventional psychotherapy. Its enhancing power when coupled with nonverbal behavior conditioning may account for that apparently small number of conventional psychotherapy successes. The operant conditioning of nonverbal behavior, or for that matter, the systematic desensitization procedure, without the verbal conditioning may well fail to produce lasting therapeutic effects.

We would like to note, as did Schmidt, that there is direct evidence for the usefulness of conditioning verbal behavior in influencing nonverbal behavior.
Lovalle (1961, 1964a, b) showed that the reinforcement of verbal aggressive behavior causes an increase in nonverbal aggressive behavior, that differences in verbal and nonverbal rates of responding can be controlled by conditioning discriminative verbal responses, and finally that children's food intake can be controlled by conditioning appropriate verbal responses. Contrary to Freud's notion of catharsis, the emission of aggressive responses induces the further emission of aggressive responses (Bandura & Walters, 1963). The general problem of transfer to which so many investigators have referred, but about which so few have done anything, must finally be dealt with in a paradigm like Schmidt's. It may be that the verbal behavior which Schmidt conditioned was not similar enough to the kind of verbal responses which in daily life control an individual's nonverbal behavior for transfer to be most effective. Perhaps a focused interview situation in which such responses were reinforced would have better served the purpose. Therapists must begin to make their therapy sessions more like the situations in which the behavior they want to change is likely to occur.

Programmed Psychotherapy

This brings us to a third therapeutic approach which has recently come into use. An article by Kanfer (1966) suggested a name for this kind of therapy, Instigation Therapy, which might more appropriately be called Programmed Psychotherapy. It consists essentially of setting up a program for the patient to follow, a program which involves his cooperation in providing basic information about his state and environmental conditions, in following the procedures suggested, and in bringing back news of the effects of the program. It also involves the application of a series of techniques for the purpose of instating self-regulatory behavior which can control the patient's behavior between sessions and after these sessions have ended. Finally, it proposes to train the patient in the skill of behavioral analysis, that is, in the analysis of the environmental conditions, present or potential, which influence his behavior. In the ideal case, the successful patient of programmed psychotherapy should be able to set up his own program the next time he encounters a crisis. This technique involves both the interview and its attendant problems as well as some form of operant conditioning.

Fox (1962), in his work on poor study habits, first presents an analysis of poor "study-responses" as being those under poor stimulus control, i.e., neither time nor place sets the occasion for studying without also setting it for other incompatible responses. Furthermore, the responses emitted by the poor student are also often inappropriate, e.g., underlining of material does not prepare the student for reciting material in the absence of the underlined material. Fox's program, therefore, consisted of having the student do all his studying of one subject in one room. He did not require the student to remain in that place for a specified time with the resultant danger of daydreaming during the session or towards the end of a session, thus having the student learn to make responses incompatible with studying. Instead he used a procedure based on behavior theory. The student was required to go to the "study" room and required to leave if he found himself daydreaming. However, at the point at which he decided to leave he was required to read one page of text or do one easy problem and then leave. The act of leaving the study room for other activities was regarded as a positive reinforcer and was therefore utilized in such a way that it followed the response which was to be strengthened, in this case studying. Fox then applied a shaping procedure by requiring the student to increase the number of pages or problems to be solved, before he was allowed to leave the study room. He also used the concept of approximation conditioning by applying the general procedure first to one course, then to one additional course, then to two and so on. Following the
advisor's instructions was under the reinforcement contingency of the advisor's potential withdrawal of help. The advisor monitored the extent to which the student followed the instructions as well as his success by interviewing him periodically for five to ten minutes. Using this general procedure, Fox was able to raise the grades of some 5 students, the smallest average change being one letter grade, the highest being 4, that is, from an F average to a B average.

Programmed therapy has also been applied to the medical problem of overeating. Ferster, Nurnberger and Levitt (1962) reported on setting up a program for the instatement of self-control over eating. These authors present a detailed report of the concepts underlying their behavioral program. First in their behavioral analysis is determination of the variables which control eating; second is determination of how these controlling variables can be manipulated; third is identification of the unwanted effects of overeating -- these being the UAC, i.e., the ultimate aversive consequences -- which are the variables that bring the subjects in for help and maintain their determination for going through this procedure; the fourth point consists of programming the acquisition of self-control -- by a procedure which employed approximation training.

Since the UAC are by definition not immediate, the first step was to make them so. This was accomplished by pairing the information (verbal responses) about the UAC with various kinds of verbal responses about eating. In other words, the first task was to establish the mention of food as a discriminative stimulus for verbal responses with aversive consequences, i.e., with responses which are also related to the UAC. (It is interesting to note here that Staats (1967) views this kind of association as an example of respondent rather than operant conditioning.) To this end the authors established group discussions, rehearsals, frequent repetitions, even written examinations -- all calculated to produce an active, readily available, well discriminated verbal repertory which would set up conditioned aversive stimuli which could then be avoided or escaped from by the self-control behavior. In all of the above techniques the operant verbal conditioning paradigm was used even though perhaps not stated as explicitly as it might have been. Concurrently, a program of self-control was initiated which consisted, in the main, of having the subject follow verbal instructions outside the therapy sessions. Thus, the person himself was required to manipulate the occasions on which he ate, the stimuli present on these occasions, such as the presence of others, books and music; he had to modify the length of the chains leading to eating (such as shopping on a day-by-day basis); he had to produce behavior incompatible with eating, and so on. In other words, the person undergoing programmed psychotherapy must develop a verbal repertory which will regulate the nonverbal behavior required by his program. Such a process is a further use of the verbal conditioning paradigm.

Another recent paper on producing self-control in patients was written by Goldiamond (1965), who presented cases on study problems and marital problems. Here too, in a program employing the concepts of behavior theory, verbal operant conditioning was utilized in order to teach the patients the program and sometimes even some behavior therapy by means of interview type of encounters.

Other psychologists have also used programmed psychotherapy. Sulzer (1965) set up a program to eliminate alcoholic drinking and in one case reinforced the verbal report of nondrinking behavior during the interview. In a second case he dealt with a student who had difficulty in studying, poor relations with his boss and his wife, and a belief that he was an inadequate father to his child. The
therapist set up a program in which he prescribed a different study environment, a different pattern of behavior toward his wife, more contact with other families like his, and a change of job. The patient's reports of his actions in following the program were approved by such verbal reinforcers as "That was wise." When the patient reported occasional discomfort with the new required behavior, the therapist put the patient on an extinction schedule, i.e., did not respond to those comments at all. Mertens (1964a, b) wrote manuals for both alcoholics and their therapists for carrying out behavior programs, and finally Berlin and Wyckoff (1963), as seen in Krasner and Ullmann (1965), devised a program to improve communication in marriage.

In summary, programmed psychotherapy employs the interview technique in part to obtain information on the basis of which a program can be constructed, in part to present the program and to teach essential verbal self-control techniques, to monitor the extent to which the program was carried out, and to instate further programming when required. Relying as much as it does upon verbalization, the importance of the verbal conditioning paradigm in programmed psychotherapy appears to be as great as it is in conventional psychotherapy or in behavior therapy à la Wolpe.

Review of Some General Principles Involved in the Operant Conditioning of Verbal Behavior

Having shown the ubiquity of the verbal conditioning paradigm in a number of different types of psychotherapy, it might be well to review some of the principles underlying the effective operant conditioning of verbal behavior.

The most important principle of behavior theory is the notion of reinforcement contingency, namely, that behavior is controlled by its consequences. In the past dozen years or so this fact has been extensively demonstrated for verbal behavior (see reviews by Krasner, 1958; Salzinger, 1959b; Greenspoon, 1962; Williams, 1964; Holz & Azrin, 1966). No attempt will be made here to embark on a further review. Instead we will discuss a number of the outstanding issues in the area that have particular relevance for therapy.

Perhaps because of the great attraction which the verbal conditioning paradigm had for clinicians, many of whom lacked the requisite training in behavior theory, a number of studies in this area quickly focussed on so-called cognitive variables, like "awareness," which cannot be directly observed, instead of on the observable and manipulable variables of discriminative stimuli or response-produced stimuli specified by the theory. At the same time, in a naive attempt to "control all the relevant variables" these experimenters resorted to a multiple choice paradigm in which the subject was reinforced for reading one to two out of 4 to 6 personal pronouns in conjunction with a verb. While such a paradigm may be useful for answering some questions, it should not be viewed as a typical operant conditioning paradigm. First, it is not a free operant situation and thus is less like the psychotherapy session to which these experimenters are trying to extrapolate. Secondly, it makes use of a response class consisting at the most of two members. After a subject has chosen the pronouns "I" and "We" for even a small number of trials, the task reduces itself to a memory exercise where all he has to do to obtain reinforcement is to remember two items. He can emit one of them only once per trial so that maximum learning is achieved very rapidly and control over the response is rapidly taken over by variables other than the experimenter's reinforcement. This paradigm raises issues relevant to the problem of awareness and will be discussed below. At this point it is important to
call attention to the more serious problem of response class, a concept of moment with respect to conditioning in psychotherapy, but one which is completely ignored by the typical multiple choice design.

A recent paper by the author (Salzinger, 1967) reviewed this problem in detail. A response class may be most generally defined as "a group of responses which have in common the fact that any one of them can be substituted for any other, according to some criterion" (Salzinger, 1967). This criterion can be any of the following: a common effect, i.e., all the different verbal responses which have the same consequence; a common discriminative stimulus, i.e., all the verbal responses evoked by a verbal or a nonverbal stimulus; a common response, i.e., all the verbal responses which, as stimuli, evoke some particular response, e.g., a galvanic skin response or a response on the semantic differential (Osgood, Suci, & Tannenbaum, 1957); a common topography of the responses in question, e.g., ending in a common sound, having the same number of letters, fluent vs. nonfluent speech; correlation to an identified response class, i.e., co-occurrence of certain responses with certain response classes like those revealed in a content analysis or in a syntactical analysis; a state of the organism, e.g., state of deprivation or private events caused by drug intake.

Knowledge of class membership of different responses is of course critical in modifying behavior, since by reinforcing some responses one can cause a desirable shift in behavior, whereas by reinforcing other responses one can condition undesirable behavior. Thus, knowing whether crying is an elicited response or one under operant control would determine how the behavior therapist would respond, i.e., whether he would comfort the child or ignore him. It is important also for the psychotherapist to know, for example, whether a patient's verbal complaint about his wife is a member of the same response class as a complaint about his boss, or, put another way, whether the variable which determines the complaint regarding his wife is the same as the one which determines the complaint regarding his boss. If the two types of complaints are members of the same response class, then the therapist need only instate verbal responses to one of these complaints, utilizing generalization to effect an amelioration of the other responses as well.

Knowledge of class membership of a patient's verbal responses is also of importance in terms of the problem of transfer from the therapist's office to the outside world. Topographical criteria for response classes are certainly the most tempting ones to be used but need not be the most critical. The therapist, very much like the experimenter, must determine class membership on an empirical basis; he must rely on grouping the verbal responses of his patient on the basis of functional, not formal, similarity. Some psychotherapists may see this as an argument for interpretation of the manifest content of the patient's verbal behavior. It is important to note here, however, that we are emphasizing the empirical validation of response classes, not how these classes are initially proposed.

Let us look at some experiments dealing with the subject of response class. The discovery that it is possible to condition verbal behavior gave rise to a number of studies whose major import was that many different classes can be conditioned and that some appear to be more resistant to conditioning than others. Wilson and Verplanck (1956) found that they could not condition adverbs because of too low an operant level. More analytic studies like that of Estes (1945) have been rare. In that study response generalization from one class to others was such that it obscured the increase in rate of response
of the class being reinforced. It may be of interest here to quote my description of this study some years ago (Salzinger, 1959b, pp. 68-69): "Estes was able to condition the general thematic class of food words by reinforcing the word 'eat' but was unable to achieve conditioning when reinforcing all food words. Such an effect might be explained by the generalization of the word 'eat' to a thematic class of food and the generalization of other food words to responses outside the general thematic class of food. The word eat might generalize to vegetables where the experimenter reinforces the word eat; the word vegetables which would be reinforced when the experimenter reinforces all food related words, might generalize to the response plant. The former is a member of the response class of food words; the latter, however, does not belong to that class. In other words, the generalization of a representative and restricted subset of responses would aid in the increase of the general class while the generalization of all members of the general class would cause an increase in responses outside the general class. The omission of these responses would forestall an increase in the general response class reinforced by the experimenter."

If this interpretation is correct and further research on this question is certainly called for, the therapist should be very careful in his decision of which members of a response class he will reinforce. Certainly one conclusion that one can draw on the basis of the above discussion, is that a therapist should not reinforce peripheral members of a response class. The fact that the nature of the response class in question must be considered was shown by an experiment with young children (Salzinger, S., et al., 1962) in which reinforcement of first person pronouns produced an increase not only in that class but also in speech in general. On the other hand, an experiment in which we tried to condition the response class of plural nouns (Salzinger, Portnoy, Zlotogura & Keisner, 1963) resulted in what appears to be an increase in a subclass marked by a particular sound, /ə/.

Our investigations of the conditioning of the response class of self-referred affect (Salzinger & Piscini, 1958, 1960, 1961; Salzinger & Portnoy, 1964; Salzinger, Portnoy & Feldman, 1964) have shown that the reinforcement of that class first results in an increase in speech in general, then in general self-referred statements, and finally in self-referred affect statements. Further evidence for the integrity of that response class comes from an experiment (Portnoy & Salzinger, 1964) in which subjects were confronted with a choice of pairing one of three pronouns with one of three verbs (one of which was a positive affect verb, one negative, and one non-affect). Reinforcement of either affect response class showed an increase primarily at the expense of the non-affect class, while reinforcement of the non-affect class reduced each of the affect classes equally, thus showing that the two different affect classes were in fact related to each other by way of response generalization to form one response class of affect.

The alert therapist can also take advantage of response class membership to produce more general changes. Salzinger, Feldman, Cowan and Salzinger (1965) reinforced the statement "gimme candy" in a child who had practically no sentences at all, and found that other members of the response class to which candy belonged were also used in the sentence frame, thus having the child use sentences more generally.

The relative conditionability of different response classes is another matter of interest to the therapist who uses verbal conditioning procedures. The study by Portnoy and Salzinger (1964) already mentioned, showed that positive, negative, and non-affect response classes conditioned equally well although they
differed in frequency of occurrence in operant level. Further analysis showed that the response class of positive affect had the highest frequency during operant level but that, contrary to the other two classes, it increased in frequency during the course of operant level. This suggests that certain response classes will increase by their own response produced positive reinforcement. Ullmann, Krasner & Gelfand (1963) found similar effects in that, as conditioned emotional words increased in frequency, the new responses which were emitted were more pleasant. In other words, all a therapist needs do to increase certain response classes is to provide the occasion (the discriminative stimulus) for them to occur. It would be worthwhile to see whether a patient's depression could be lifted by asking him to describe happy experiences, first perhaps about others, and eventually about himself. The fact that a response class which decreases in frequency of occurrence over time might have associated with it a negative reinforcement which is response produced also must be considered by the therapist. In relation to this, Weiner (1962) manipulated such negatively reinforcing effects through the variable of response cost where each response made costs a point with each positive reinforcement consisting of 100 points.

The differential conditionability of verbal and nonverbal behavior was empirically tested by Salzinger, Feildman and Portnoy (1964). As might be expected, verbal behavior was more easily conditionable. Whether the relative ease of conditionability of verbal behavior is caused by an inborn factor, or is due to the greater amount of reinforcement which verbal behavior receives, is not as important here as the fact that the superior conditionability of verbal behavior could be turned to advantage by a psychotherapist. Certainly this greater conditionability of verbal behavior should be considered when programming for a patient.

Another factor related to response class is the size of the response unit. The size of any behavioral unit must be determined empirically and the point at which one response ends and another begins is not always clear. With respect to verbal behavior this problem is further aggravated since response unit size varies from one situation to another. It is important to remember that the unit, like the class of a response, is determined by functional arrangements, and not by topography. For a more detailed discussion of this issue see Salzinger (1962).

At a recent meeting of the American Psychological Association Psychotherapy Conference, this author (Salzinger, 1966) discussed another related phenomenon, namely, complexity of behavior. Among the sources of response complexity mentioned were response class and response unit. Of special interest here is another source is the kind of response class whose occurrence has a much greater payoff than the typical response class. Such a response class makes possible an entirely new series of responses and their concomittant positive reinforcers and elimination of negative reinforcers. Thus, a child who is conditioned to emit the verbal response class whose members are, "Can I play with you?" or "Come look at my blocks!" or "Do you want to play with me?" is obviously optimizing the positive reinforcements he might get for playing with those children and minimizing the negative ones he might receive for simply intruding into a game of some other children.

The phenomenon of response incompatibility has not been made use of often enough in verbal conditioning experiments, but it obviously has a place with respect to such clinical phenomena as obsessive thinking. The therapist conceivably might more easily influence such thinking by reinforcing verbal responses
which will compete with the undesirable responses than to try to extinguish them.

New Developments in Behavior Theory

Among the principles which have been used very sparsely are those involved in programmed instruction. Its techniques would be quite useful in the area of verbal conditioning. The first step in any programming venture is the specification of the terminal behavior, i.e., the behavior the therapist is interested in having the patient emit at the end of therapy. Specification of this behavior must be much more detailed than is usual for psychotherapists. Statements like, he should have a healthy personality or he should be able to get along with others, are grossly inadequate. Response classes and their discriminative control must be described in detail. The next step calls for cataloguing the entering behavior, i.e., current response classes and the discriminative stimuli which control their occurrence. A comparison of the entering behavior with that of the terminal behavior sets the task for the therapist. At this point he has to do a behavioral analysis of the behavior to be instated, the behavior to be eliminated, the chains of responses to be instated or eliminated, and the discriminative control to be established, increased, reduced or eliminated. The next step consists of planning the strategy to be followed in bringing about the requisite changes. A staple series of techniques are used here. Shaping of responses, which has already been mentioned, and prompting followed by fading. Prompting procedures are used to produce responses whose operant level is close to zero. Direct instruction, leading questions, imitation procedures variously called modelling (Bandura, 1965) or vicarious reinforcement (Kanfer, 1965) are called for here. A modelling design for increasing the response class of self-referred affect statements was recently used. In that design, the interviewer modelled the response class to be learned by the interviewee (Wilder, 1967). Programmed instruction generally changes the prompting stimulus slowly by gradually fading it out. This is in contrast to the prompting procedures now used in psychotherapy. Like shaping, the removal of a given type of stimulus control must be accomplished gradually.

What this means for the conduct of the interview is that the questions and other discriminative stimuli used by the interviewer must be slowly faded out over a number of sessions so that other stimuli, possibly response produced ones, assume control over the desired responses.

One of the new developments in the literature on the operant conditioning of verbal behavior has been what might be termed the pseudoproblem of awareness. The issue has been reviewed by Krasner (1967) and earlier had a symposium devoted to it, (Eriksen, 1962). Perhaps the most unfortunate aspect of the controversy is that some psychologists of the "Cognitive" school of thought have drawn the unwarranted conclusion that where one finds "awareness" the operant conditioning model is inappropriate for human behavior. Considered quite differently, awareness means that at some point in the experiment the subject emits a verbal response which takes over some or all control of subsequent conditioned responses. In the case of some experiments this may be rapid, in others slow, and in still others nonexistent. The fact that a discriminative stimulus assumes control over a response class is of course not surprising; it is in fact a well studied phenomenon in animal and in human work, having a history perhaps as long as that of learning itself.

In verbal conditioning studies the phenomenon of awareness is "revealed" by means of interviewing the subjects after they have gone through a conditioning procedure. That the process of interviewing itself may in fact suggest "awareness", i.e., condition the subject to emit "awareness responses," was stated by
Spielberger (1962), who found 6 subjects admitting to awareness and yet could not separate them from a control group which received no reinforcement at all. It is also true that most studies which find awareness to be correlated with amount of conditioning are carried out with response classes of one or two members, with instructions so designed and types of subjects so selected as to maximize curiosity and therefore increase the probability of verbal responses that might serve to control subsequent conditioned responses.

Before leaving this topic we might just mention one study (Dixon and Oakes, 1965) which showed, using a design common among the "awareness" psychologists, that even here one can structure the experiment to produce either a positive relation or no relation between a post conditioning interview and conditioning.

With respect to the implications for psychotherapy, the following may be said. Typically, experimental designs which call for continuous speech, such as interviews or story descriptions, do not result in verbal responses which completely control further emission of the conditioned responses. It may also be true that some response classes are more easily changed if the subject develops no such verbal responses. Such responses often take the form of "I don't want him to control me" or "Is he trying to trick me?" They have a conditioned aversive quality which can be terminated only when the patient ceases to emit the conditioned responses. On the other hand, carefully achieved verbal control over a patient's own responses, together with the therapist's reinforcement, may be an even more powerful way of modifying the patient's behavior.

Behavior theory is a changing field where new discoveries are still being made. It is therefore important for the psychotherapist to apply the current principles of behavior theory and not those of yesteryear to his practice. An important new discovery with respect to stimulus generalization, for example, was recently made by Terrace (1966), namely, that stimulus generalization appears to be a function of the original training procedure rather than a phenomenon simply related to physical stimulus properties. The training procedures for conditioned reinforcement, which seemed completely clarified some 15 years ago, now appear to be in a state of ferment again (Wike, 1966). These and other developments must be monitored so that the verbal conditioning procedures can be improved as new knowledge is acquired.

On The Future of Verbal Conditioning

When Krasner (1962) delivered a paper entitled "The Therapist as a Social Reinforcement Machine," much of the subsequent discussion was an attempt to refute completely the applicability of the verbal conditioning model to psychotherapy. Such statements were made as, the changes in operant conditioning are not deep, lasting or extensive, that the changes occur in people who want to change, that "change in psychotherapy is mediated quite differently" (Luborsky and Strupp, 1962), and even that the definition of reinforcement is too general and that it is not clear what is being reinforced. Answers to these criticisms are available in the foregoing discussion. Furthermore, the presence of reinforcement and its effect in actual non-behavior theory oriented therapy sessions has been made manifest. In some studies, such as Murray's (1956), objective content analysis revealed a clear relationship between frequency of occurrence of "approval" and "disapproval" in conjunction with the categories these reinforcers followed. In another content analysis of psychotherapy, Truax (1966, p. 7) argued that, having found the presence of reinforcers in Carl Rogers' own therapy sessions, "the finding that empathy and warmth act as reinforcers
suggests that the evidence relating empathy and warmth to patient outcome is open to a behavioristic interpretation, based in part on the therapist's use of differential reinforcement".

We have come a long way. Not only have psychologists developed new techniques of psychotherapy on the basis of behavior theory, but even conventional psychotherapy appears to have included, unbeknownst to the therapist, differential reinforcement. Like Molière's character who discovered that he had been speaking prose all his life, so the conventional psychotherapist has discovered that he has always used reinforcement on his patients.

Summary

An attempt was made to describe the place of operant conditioning of verbal behavior in three different types of psychotherapy: conventional psychotherapy, behavior therapy (therapy based on classical conditioning), and programmed psychotherapy (therapy based on operant conditioning). It was pointed out that all three types of therapy do not make sufficient, explicit use of verbal conditioning data and techniques. A number of specific suggestions for the application of verbal conditioning to therapeutic procedures was presented.

With regard to conventional psychotherapy, the author traced somewhat the historical relationship between therapy and behavior theory, pointing out that only when its independent usefulness was established was the field of psychotherapy ready to profit from it. The danger and futility of disregarding reinforcement aspects of any verbal interaction were underscored by showing that it is an integral part of any such interaction. It was also shown that the lack of success of conventional psychotherapy, along with the inappropriateness of the typical psychodynamic descriptions of the interview, make the need for behavior therapy even more urgent.

In the discussion of behavior therapy (classical type) the author again brought out the importance of verbal behavior, showing that the verbal conditioning paradigm was an integral part of Wolpe's desensitization procedure. The similarity of the desensitization procedure to an operant shaping procedure was argued. Finally, the idea of combining the operant and respondent types of conditioning in psychotherapy was put forth as a potentially useful procedure.

Programmed psychotherapy, the youngest of the three types of therapy and stimulated by behavior theorists' recent success in the field of programmed instruction, makes use of verbal conditioning in two ways: first, by giving the individual a general knowledge of behavior theory and by training him to follow his own program; secondly, by conditioning particular kinds of behavior directly by the therapist.

The last part of this chapter reviewed some of the general principles involved in the operant conditioning of verbal behavior and recent developments in behavior theory. The importance of the concept of response class was made evident both in the experimental literature and in the therapy session. Also discussed, were the concepts of response unit and awareness (a concept better described in terms of response-produced stimuli than in cognitive language), prompting and fading, and terminal and entering behavior in programmed learning. Their significance, actual and potential, was discussed.

The future of verbal conditioning in psychotherapy depends upon the recognition of its value by the clinician. Psychotherapy has much to gain from the methodical application of the results and techniques of the operant conditioning of verbal behavior.
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