Transfer of training through verbal conditioning in therapy

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THE TRANSFER OF TRAINING THROUGH VERBAL CONDITIONING IN THERAPY

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University of Massachusetts

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<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>a. Studies of Awareness</td>
<td></td>
</tr>
<tr>
<td>b. Studies of Schizophrenics</td>
<td></td>
</tr>
<tr>
<td>c. Implication for Present Study</td>
<td></td>
</tr>
<tr>
<td>Method</td>
<td>14</td>
</tr>
<tr>
<td>a. Subjects</td>
<td></td>
</tr>
<tr>
<td>b. Conditioning</td>
<td></td>
</tr>
<tr>
<td>c. Measurements of Change</td>
<td></td>
</tr>
<tr>
<td>d. Awareness</td>
<td></td>
</tr>
<tr>
<td>Results</td>
<td>17</td>
</tr>
<tr>
<td>a. Criterion Measures</td>
<td></td>
</tr>
<tr>
<td>b. Ward Rating Scales</td>
<td></td>
</tr>
<tr>
<td>c. Personality Measures</td>
<td></td>
</tr>
<tr>
<td>d. Awareness</td>
<td></td>
</tr>
<tr>
<td>e. Tables</td>
<td></td>
</tr>
<tr>
<td>f. Figures</td>
<td></td>
</tr>
<tr>
<td>Discussion</td>
<td>49</td>
</tr>
<tr>
<td>Summary</td>
<td>55</td>
</tr>
<tr>
<td>Appendix</td>
<td>57</td>
</tr>
<tr>
<td>References</td>
<td>58</td>
</tr>
</tbody>
</table>
**Introduction**

In the traditional psychotherapy setting, the therapist's role, for the most part, is to deal with the verbal responses emitted by the patient. Rapaport (1960) stated that the psychotherapist begins therapy with the notion that the patient is not employing the proper categories of thought and speech which will enable him to deal effectively with the world. The aim of therapy is to enable the patient to reorganize and redirect his thought and language. The way in which this is accomplished, according to Rapaport's viewpoint, is for the therapist to selectively "receive" communications from his patient, and then to formulate and make responses which are potentially constructive. In effect, what the therapist attempts to do is to systematically shape the patient's verbalizations.

Psychotherapy has been viewed more as an art than a science, and as such, relatively little of it has been subjected to rigorous experimental validation or investigation. In recent years, there has been increasing recognition of psychotherapy as a complex learning situation, and many psychologists have successfully employed the language and concepts of current learning theory to gain a better understanding of therapy procedures. It should be pointed out that instead of adapting psychotherapeutic techniques to the conditions prescribed by learning, the concepts of learning were used to describe the events occurring within the traditional model.

Krasner (1955) advanced the following argument with regard to the systematic study of the psychotherapy encounter:

A problem is for the therapist to use his techniques to guide the patient's verbalizations into certain areas which he feels will eventually be beneficial to the patient. He does this by a variety of reinforcing
techniques such as suggestion, interpretation, questioning, or other ways of indicating that he is interested in or paying particular attention to certain aspects of the patient's verbalizations. Thus, since verbalization is of such importance in therapy, and since it is a segment of general behavior which is measurable, it would seem to be the logical dependent variable with which to start an experimental approach to the problem of psychotherapy (p. 22).

Krasner (1958; 1962) and Krasner and Ullmann (1965) point out that, on the basis of experimental research, events which occur as people are talking can significantly affect what they will say. Krasner's review (1958) points out that verbal behavior occurring in a variety of situations can be conditioned by using generalized reinforcers, such as "good," "mm-hmm," or a head nod. Typical of such studies is one by Sarason and Ganzer (1962) which showed that both positive and negative self-references were increased by reinforcement from the experimenter.

Krasner (1963) views the therapeutic encounter as a social reinforcement situation, in which the therapist, through his knowledge and employment of operant learning techniques, controls and manipulates the therapeutic situation. Krasner (1963) has further stated that changes in verbal behavior may generate changes in other types of behavior (nonverbal), and that the modification of verbal behavior itself could be a therapeutic treatment (Krasner, 1965).

Slechta, Gwynn, and Peoples (1963) support Krasner's argument and state that since most traditional psychotherapy depends greatly on verbal interchange, and since changes in verbal behaviors are considered to be the sine qua non of gross behavioral change, it would logically follow that if an individual were unable to condition verbally, it would greatly lessen his chances of responding to therapeutic intervention.

Dinoff, Rickard, Salzberg and Sipprelle (1960) pointed out that in the psychotherapeutic situation a person's remarks could be classified
into three general groups: (1) those remarks which refer to his environment, (2) those which refer to the therapist and (3) those which refer to himself. The frequency of the latter class is the one that most therapists believe has to be changed in order for nonverbal behavioral change to occur.

It is not too surprising that clinicians have been concerned with increasing specific classes of responses through the employment of social reinforcement, and it is not any more surprising that they have become increasingly concerned with the application of conditioning techniques to the therapy or interview situation.

Working with the hypothesis that a change in verbal behavior reflects a general change in behavior and with the notion that the verbal changes produced in therapy are the result of the use of verbal reinforcers, the trend in the verbal conditioning research has moved in the direction of assessing the generalizable effects of reinforcing a class of responses. In this way verbal conditioning research is indirectly attempting to explore the relevant variables of the therapy influence process.

There have been several studies in a non-therapy setting which have found evidence for a transfer phenomenon. Timmons (1959) found that subjects reinforced for emitting words related to buildings, when asked to draw the first thing that came to their mind after the conditioning aspect of the experiment was completed, more frequently drew buildings than other Ss not so conditioned. B. R. Sarason (1956) found an increasing usage of body activity words in a post-test after subjects had been reinforced for this type of response. Singer (1961), investigating the probability of modifying a subject's attitudes toward democracy, reinforced prodemocratic responses and found an increase in this type of response.

Other investigators have employed a quasi-therapy experimental setting
in studying the effects of reinforcement and generalization to related tasks. Nuthmann (1957) found that when she reinforced a group of individuals with "good," they displayed changes in a positive direction on a true-false personality test in that they showed a more self-accepting attitude toward themselves. Rickard, Dignam, and Horner (1960) tried to manipulate the amount of delusional speech emitted by a long-term psychiatric patient. They positively reinforced non-delusional verbalizations with a smile, a head-nod, and verbal stimuli. Whenever delusional responses were verbalized, the therapist would look away from the patient and gaze out a window. This was construed as negative reinforcement.

Under a high rate of contingent social reinforcement the patient's rational speech increased. When the contingent reinforcement was reduced, the patient's rate of delusional speech sharply increased.

J. M. Rogers (1960) employed college students as subjects in a quasi-therapy situation. The Ss were assigned to three different groups and were seen in six ten-minute interviews. The subjects in Group I were reinforced with an "mm-hum" each time they verbalized a positive self-reference. Group II Ss received the "mm-hm" contingent on their emission of a negative self-reference. The third group consisted of control Ss who received no social reinforcements. Rogers found that negative self-references increased significantly when they were reinforced and remained stable when they were not. He further found that positive self-references did not increase when reinforced and, in fact, decreased when no reinforcement was given. Such a finding is not in accord with much of the previous literature in this area, and in order to explain it, Rogers pointed out that positive self-references normally tend to extinguish and that reinforcement merely arrests the extinction process and keeps them at the same level. But he does not make it clear
why positive self-references do not appear to be in accord with the laws of reinforcement previously established in the verbal situation.

There was a tendency for Groups I and II to show some change on the Q-Sort Adjustment Test but this change was not significantly different from the Q-Sort scores of the control group. Rogers theorizes that with a longer period of conditioning, i.e., more interview sessions and sessions of longer duration than the ten minutes employed, the adjustment scores may be significantly increased. Harmatz (1967) hypothesized that the particular psychological tests, notably the Q-Sort employed by Rogers to measure change, may well have been insufficiently sensitive to detect small changes in personality. Harmatz found personality changes reflected with the Semantic Differential technique but not with the Q-Sort procedure. Rogers also concluded that the effects of the reinforcing stimuli were confined to the interview itself since the conditioning of self-references did not affect self-references outside of the interview setting assessed by the difference scores of pre- and post-measures on the Adjective Self-Description Test.

Moos (1963) in a study similar to Rogers', found that subjects who received positive reinforcement ("mm-hmm") contingent on their producing independence or affect statements successfully conditioned, but they did not show transfer of this effect to another experimenter after a twenty-four hour interval. Lovaas (1961) found successful transfer to overt behavior through reinforcing aggressive verbal responses in children, but when non-aggressive verbal responses were reinforced, he did not find that there was successful transfer to overt behavior.

Lanyon (1967) investigated the effect of social approval contingent upon the emission of content responses and affect responses. Ninety undergraduate females served as Ss and were divided into six treatment
groups. Group I was positively reinforced with an "mm-hmm" and head-nod for content responses. The particular class chosen was "parent words" such as father, mother, brother, etc. Group II received social reinforcement for the emission of affect or emotional responses. Groups III and IV received social approval at fixed time intervals during the interview session, regardless of the nature of the responses. Groups V and VI did not participate in the verbal conditioning tasks per se but did take the same personality tests as the other four groups.

Lanyon found an increment in the number of content responses produced by Group I Ss, but there was no transfer to a sentence-completion task. There was no increase in the number of affect responses produced by any of the groups, even when social reinforcement was contingent upon their emission and, once again, there was no transfer of training. Lanyon concluded that positive transfer results were not achieved because "mm-hmm" and head-nods are some of the weaker interpersonal reinforcers operating during therapy. The alternate arguments which may be offered are those which apply to Rogers's data as well; that is, the duration and length of treatment was too brief and the tests employed were not sensitive enough to assess subtle changes.

The general conclusion which can be drawn from the studies investigating the transfer of training through verbal conditioning is that, to date, verbal conditioning has not been shown to be a useful analogue for understanding lasting changes which may occur in counseling or therapy. The bulk of the studies reviewed proceeded from the assumption that responses followed by social approval during an interview session would cause a change in the person's personality and this change would be reflected in test measurements. This assumption has not been confirmed.

The assumption behind reinforcing the frequency of a response (Lanyon,
is that the individual's verbal repertoire has been changed so that he is now responding differently than he had responded prior to the conditioning sessions. Harmatz (1967), however, stated that, "Increasing the frequency (of a response) may be strengthening the existing verbal repertoire rather than changing that repertoire." The effects of such a phenomenon could result in a decrease in the likelihood of demonstrating postconditioning changes as measured by personality tests.

Every study concerned with the effects of verbally conditioning a specific response category and studying its effects on related personality tests has been conducted under artificial laboratory conditions. Yet Krasner's 1955 argument relates to the therapy situation and not to some quasi-therapy experiment. Every study of this kind has purported to study verbal conditioning in the therapy situation but to this writer's knowledge, in fact, not one has. If one is truly concerned with applying learning theory concepts to psychotherapy and to generate hypotheses concerning what is happening in therapy, then the role of verbal conditioning in a therapeutic setting should be investigated. The present study is the first such study to this writer's knowledge to actually take psychiatric patients in psychotherapy and explore the variables of the therapy-influence process via conditioning.

**Studies of Awareness**

Awareness has long been considered an important variable in verbal conditioning. In any study of the psychotherapy process and its effectiveness, there is usually a great deal of concern with insight. It is generally felt that when a person becomes aware of his characteristic patterns of interacting and/or acting and can see where his problems stem from, he has made the giant step in the direction of understanding.
himself and changing for the better. Thus, it has been a traditional belief that awareness or insight is a necessary requisite for personality change. Several studies in recent years, however, have cast some doubt on the credibility of this argument.

Greenspoon's (1955) verbal conditioning experiment was interpreted by others as evidence that learning could occur without awareness as an automatic function of the reinforcement (Dollard and Miller, 1950, p. 44). Verplanck (1955) found that it was possible to increase the rates of speech in individuals through contingent verbal reinforcement without the individual involved realizing he was a subject in an experiment. Studies which followed Greenspoon's and Verplanck's were reviewed by Krasner (1958). These 31 studies, employing operant techniques, tended to support the general conclusions of Greenspoon; that is, acquisition of a verbal response occurred during operant reinforcement, and the subjects gave little or no evidence of awareness. In fact, Krasner stated that only about 5% of subjects in all of the experiments were said to be aware.

Some studies have questioned the validity of the conclusion that learning can occur without awareness during operant conditioning. Awareness refers in a general way to the subject's thoughts, ideas, and hypotheses about the experiment; a more specific definition is that given by Spielberger (1962), "as a process which intervenes between stimuli and responses whose properties may be delineated by converging operations." Tatz (1960) conducted a study which suggested that partial awareness, or solutions which are not entirely correct, could account for the conditioning effect. Adams (1957) reviewed laboratory studies on awareness, including those of verbal conditioning, and concluded that contrary to widespread conviction among psychologists, learning without awareness was not firmly established. He pointed out that a correlated hypothesis may account for learning; that is,
a partially correct hypothesis which increases responding above chance level. Eriksen (1960) agreed with these earlier conclusions, stating that learning without awareness in verbal conditioning studies has been characterized by uncritical acceptance. He suggested that measures have not been sensitive enough to detect awareness when it was present.

Krasner, Weiss and Ullmann (1961) state that, taken alone, awareness is a concept of dubious validity. Data from several studies (Ekman, Krasner, Ullmann, 1963; Kanfer and Marston, 1962; Simkins, 1963; Spielberger, 1962; Spielberger, Levin and Shepherd, 1962) support the conclusions that awareness is a function of preconditioning instructions, discriminability of critical responses and reinforcement, personality interaction, and atmosphere, and that these variables can be controlled to influence reported awareness.

Kriechhaus and Eriksen (1960), in their study of awareness and its effects on learning and transfer, studied semantic generalization, but found there was no difference between aware and unaware groups on generalization scores even though aware subjects showed greater conditioning. Dreanon (1963) studying differential degrees of transfer situations, found evidence of transfer and differential effects for two degrees of similarity. He concluded that awareness was not related to transfer.

Though the literature reviewed indicates that the issue of awareness is not resolved; there is some question as to its importance as an empirical concept. Greenspoon (1962) states that since the definition of awareness is not firmly established, it is fruitless to argue it from differing viewpoints. For the purpose of this study, awareness is operationally defined as the S's explicit verbal report that the experimenter responded with an "mm-hmm" or nod of the head whenever he S emitted a specific delineated response.
Studies of Schizophrenics

The present study proposed to use schizophrenics as subjects. Schizophrenics have sometimes been observed to be less responsive to social rewards than other people. The acquisition of verbal conditioning in schizophrenics has been investigated by a number of researchers. Cohen and Cohen (1960) used hospitalized patients, half of whom were diagnosed as schizophrenic and half of whom were diagnosed as neurotics. They found that through verbal conditioning techniques neurotics would show an increase in pronoun usage while schizophrenics did not. Weiss, Krasner, and Ullmann (1963) reinforced psychiatric Ss diagnosed schizophrenic. These subjects were asked to tell TAT stories. They found that through the usage of verbal conditioning these subjects would produce a greater number of emotional responses than if not conditioned. Krasner (1965) theorizes that Cohen and Cohen (1960) failed to obtain conditioning with schizophrenics because their experimental procedure was a problem-solving one where pronouns were reinforced rather than a free verbalization situation.

O'Conner and Rawnsley (1959) reported verbal conditioning in both paranoid schizophrenic and non-paranoid schizophrenic patients. Hartman, however, reported difficulty in obtaining verbal conditioning using schizophrenic patients. His reinforced response class was a personal pronoun, and his reinforcing stimuli were "good" and a nod of the head. Salzinger and Pisoni (1958; 1961) successfully conditioned affect statements in schizophrenic patients. Salzinger, Portnoy and Feldman (1964) achieved conditioning of continuous speech with schizophrenic patients. Dinoff, Horner, Kurpiewski, and Timmons (1960) demonstrated that conditioning can be achieved with schizophrenic patients using conventional verbal reinforcers such as mild agreement, words, head-nods, etc. Ellis (1967) found that reinforcement tended to be more effective when psychiatric Ss
had no pre-experimental interview with the experimenter. Beech and Adler (1963) using a Taffel method in an attempt to condition pronoun usage employing neurotics, depressives, schizophrenics, and normals as Ss found that among the aware Ss as measured by a post-experimental questionnaire only normals and schizophrenics showed changes in the direction of more frequent usage of reinforced responses. Krasner, Weiss, and Ullmann (1961); Ullmann, Krasner, Edinger (1964); and Weiss, Krasner, and Ullmann (1961) all achieved conditioning with schizophrenic Ss. The general conclusion derived from the verbal condition research with schizophrenic Ss point out that, in general, conditioning can be acquired in a free verbalization setting but not in a problem-solving paradigm. These results would imply that if schizophrenic subjects were employed in a therapy-like situation, they could be conditioned because of the free-verbalization aspect of therapy.

Indications for Present Study

The literature reviewed thus far has suggested that therapy, in good part, is nothing more than systematic reinforcement of desired responses. It has been implied that by increasing the frequency of a particular response class, of an individual, the individual's personality is so changed that he now responds in a more favorable way, than before conditioning, on personality measures and in terms of overt behavior. Although most recent studies done in a therapy-like setting do report conditioning (Lanyon, 1967; Moos, 1963; Rogers, 1960), not one has demonstrated that verbal conditioning effects are generalizable to personality measures.

Despite these negative findings, the literature does not dismiss verbal conditioning as being an irrelevant variable in the study of therapy, but it suggests that there have been many inadequacies in the procedures
employed. The one most often discussed is that the bulk of the verbal conditioning studies have been done in artificial, laboratory settings which do not actually resemble therapy. It has been implied that if the verbal conditioning situation was made comparable to the actual therapy situation in such relevant dimensions as subject selection, duration of sessions, and the number of sessions; personality changes could be generated as the result of conditioning.

Another procedural shortcoming in the studies reviewed has been their failure to provide an adequate control group for the group receiving contingent reinforcement. This lack has led to difficulty in interpreting the effects of conditioning.

The research bearing on the generalization of reinforced responses argues, in essence, that therapy is nothing more than a poorly controlled verbal conditioning situation. It is suggested in this research that a major problem has been the inability to produce conditioning of sufficient strength to foster change. A logical way to test this idea is to structure the verbal conditioning situation in such a way that it compares favorably, in terms of the relevant dimensions previously cited, to therapy.

The present study is an attempt to investigate the effects of reinforcing positive self-references in just such a therapy-like situation. It is predicted that Ss who are reinforced for producing positive self-references will condition, while Ss not given contingent reinforcement for emitting self-references will not increase the frequency of emitting positive self-references. It is also predicted that conditioning will lead to changes in a positive direction on the personality measures and in overt behavior as reflected by ratings on a behavioral checklist.

Although the relevancy of awareness as a variable is questionable, it is suggested, from the literature reviewed, that Ss aware of the reinforcement contingency should show transfer effects, while unaware Ss will
will neither condition nor demonstrate generalization of training.
METHOD

Subjects

The subject population for this study consisted of 27 neuropsychiatric patients at the Northampton, Massachusetts, Veteran's Hospital, all of whom were housed on the same ward. They also all met the following criteria: each carried the official hospital diagnosis of Schizophrenic Reaction, Chronic Undifferentiated Type, defined as chronic by current hospitalization exceeding three years; each was within an age range from 29-59 years; none showed evidence of organic brain disorder according to hospital records; none had electro-convulsive therapy in the month prior to experimentation; and all Ss had similar dosages of medication, from 400-600 mg. of Thorazine each day.

Five pilot Ss were asked prior to the experiment proper to freely talk about themselves, their personality characteristics and traits for an hour. This task was done to assess the optimum length for each therapy session. Thirty minutes was selected as the optimal time period since the Ss could not sustain free verbalizing, without comment from the therapist, much beyond that period of time.

Conditioning

The Ss were randomly assigned to one of three groups (N=1 in each group).

Experimental Group - At the onset of the first interview session the Ss in this group were read the following directions:

You have been referred to an experimental type of psychotherapy. In order for a therapist to be able to help people in therapy, he must know how they think and feel about themselves. You are asked to describe spontaneously your personality characteristics and traits without any questions or comments from the therapist.

There was no other verbal interchange with the Ss during the course of the therapy hour. Subjects in this group received an "mm-hmm" and
head-nod contingent on their emitting a positive self-reference, e.g.,
"I am working part-time in order to build up my confidence." Each S
participated in eight 30-minute free verbalization sessions. All sessions
were tape-recorded.

Yoked Control Group - Ss in this group were read the same directions
at the start of the therapy sessions as were read to the Ss in the experi-
mental group. These Ss were "yoked" with one of the Ss in the experimental
group. That is, the number of reinforcements they received and the time
during the session when they received the reinforcements was dependent on
the number and time in the session their yoked partner in the experimental
group elicited an "mm-hmm". The matching was accomplished by a rater playing
back the tape recorded session with an experimental S. At the same time,
a second tape, which was blank, was running. Whenever an "mm-hmm" was
given, a signal (beep) was recorded on the blank tape. Thus the second
tape was programmed with a series of "beeps" which corresponded to the
times when the experimental group S was reinforced.

During the interview sessions with the Yoked Control Ss, as with the
Experimental group, a hearing-aid type earphone was worn by the E. The
subjects were told that the experimenter was monitoring the tapes by using
the earphone. This hearing-aid was connected to the tape programmed with
the "beeps." This tape was played simultaneously with another tape-recorder
which recorded the session. When a "beep" was heard, the E delivered an
"mm-hmm" and head-nod at the end of the reference being verbalized.

Invited Control Group - These nine Ss were told that they would be seen
in therapy but at the present time no one was available to see them. They
were to assume, however, that a therapist would be available shortly. In
the meantime, they were asked to fill out the personality questionnaire
given to subjects in all three groups.

The three groups did not significantly differ on the following variables: mean age (37.5 years), mean education (11 years), marital status (approximately half of the Ss in each group were married), drug status (100% on drugs), and mean length of hospitalization (84 months).

Measurements of Change

Prior to the first session, two full-time psychiatric nurses, who were not informed of the purpose of the experiment, were asked to rate all members of their ward on the Psychiatric Reaction Profile (Lorr, O'Connor and Stafford, 1960). In addition to not being aware of the purpose of the study, the nurses were unaware of which Ss were in the experimental treatment groups or the control groups. The nurses also rated the patients after four weeks of treatment and at the conclusion of the experiment proper. Inter-judge reliability on the four subscales (Paranoid-Belligerence, Agitated Depression, Withdrawal, and Thinking Disorganization) was computed by use of Pearson's r. These correlations ranged from .89 to .96 and all were significantly different from zero, (p. < .01).

Each subject was administered the Taylor Manifest Anxiety Scale and a Semantic Differential prior to therapy, after four weeks of therapy, at the conclusion of therapy (after eight weeks) and two days after the termination of therapy sessions. The following concepts were included on the Semantic Differential Scale: myself, my ideal self, myself as others see me, the good me, the bad me, the other patients on my ward, the hospital staff, my home and the therapist. Three evaluative scales (clean-dirty, good-bad, fair-unfair), three potency scales (large-small, strong-weak, heavy-light), and three activity scales (active-passive, fast-slow, hot-cold) were used because of their high loading on one of the three factors
and negligible loadings on the other two. The standard instructions of Osgood, Suci, and Tannenbaum (1957) were used.

**Awareness**

At the conclusion of treatment each S was administered an awareness questionnaire (see Appendix I). Awareness of the reinforcer was determined by the subject indicating "yes" or "no" after the question, "Did you hear me saying "mm-hmm" at any time during the sessions?" Awareness of the response-reinforcement contingency was assessed by Ss replying to the question, "When did I say 'mm-hmm'?" Ambiguous answers were followed up by, "Tell me more about it."

**Results**

The recorded therapy sessions of both the Experimental and Yoked Control Groups were listened to by two female judges who were not informed of the purpose of this study. They were instructed to rate each incomplete thought or sentence as being either a positive, negative, or neutral self-reference response, or as being a non-self-reference response. They were also required to indicate whether or not each of these was followed by an "mm-hmm".

The two judges made their frequency counts independently. Average percentage agreement between the two judges in rating positive self-references (PSR's) was .93, negative self-references (NSR's) .96, neutral self-references (NSR's), .94, non-self-references (NonSR's), .92, and total references, .94. All were significantly different from zero as p < .01. These figures compare favorable with reliabilities of .81 to .95 reported in similar studies (Lanyon, 1967; Moos, 1963; Rogers, 1960).

The first ten-minute section of session one for each subject was
operationally defined as the operant level. The total number of responses emitted during that time period was calculated, as were the number of P3R's, M3R's, NoSR's, and NonSR's. A percentage for each response class was calculated for the operant period. A percentage based on the frequency of emission of responses for each session was also calculated. Thus, there were nine percentage scores calculated for each response class, one for the operant level and one for each session. A difference score for each response category for each session was calculated by subtracting the percentage score for any one response class calculated for any one session from the percentage score obtained for that response category during the operant level. The means for these scores are given in Table 1. The means for each response category summed across the eight weeks of treatment are graphically depicted in Figure 1.

Results of a repeated-measurements analysis of variance, comparing the frequency of emission of P3R's between the experimental group and the yoked control group, are summarized in Table 2. As can be seen, the treatment effect was significant (p<.01). Those subjects reinforced for emitting P3R's produced a greater number of P3R's than did those subjects not reinforced for emitting P3R's. It is clear from these findings that social approval, when contingent upon emission of positive self-references, was associated with an increment in the production of positive self-references while noncontingent social approval was not.

There was also a significant effect for the weeks variable (p<.01). This reflects an overall increase, from session one, in the frequency of P3R's emitted during the sessions. There was also a significant Treatment by Weeks interaction (p<.01). This interaction effect is shown graphically in Fig. 2. There was an overall increment in P3R's emitted by the experimental group from the number emitted during Session 1, while there was an
overall decrement in those emitted by the yoked control group.

In order to assess the emission of NSR's, a repeated-measurements analysis of variance was performed on the NSR difference scores. These data are summarized in Table 3. There was no significant Treatment effect or Weeks effect. There was a significant Treatment by Weeks interaction \((p<.05)\). This interaction is illustrated in Fig. 3. This effect reflects the week-to-week fluctuations in production of NSR's by both groups and the increase in NSR's during the last two sessions by the experimental group, while the yoked control group's production of NSR's declined during this same period of time. As can be seen, the NSR's produced by both groups fall below the operant level. This supports the hypothesis that when negative self-references are not reinforced, there is an overall decrement in their production.

The frequency of NeSR's was also examined. In order to assess differences among the two groups on their emission of NeSR's, a repeated-measurements analysis of variance was performed. The results are summarized in Table 4. There was no significant Treatment effect. There was a significant Weeks effect \((p<.01)\). This effect reflects an overall decrement in the emission of NeSR's during the treatment period by both groups. The Treatment by Weeks interaction was also significant \((p<.01)\). This interaction is illustrated in Fig. 4. This data plot shows that there was no consistent pattern, by either group, across weeks. It is apparent from these results, however, that, in general, without conditioning being contingent upon neutral self-references, this class of responses does not tend to increase but shows a tendency to decrease.

The results of a repeated-measurements analysis of variance performed on the NonSR's difference scores, done to assess the effects of reinforcement not being contingent upon their emission, is given in summary form in
Table 5. There is no Treatment effect or Weeks effect. There is, however, a significant Treatment by Weeks interaction \( (p<.01) \). This interaction effect is depicted in Fig. 5. It is seen that the number of NonSR's emitted by the yoked control group increased, in the average, more than did the number of NonSR's emitted by the experimental group. Both groups, however, tended to consistently produce NonSR's above the operant level.

A repeated measurements analysis of variance was performed on the total number of references emitted by both groups in order to compare their overall verbalizations. These data are summarized in Table 6. There was no Treatment effect. The Weeks effect is significant \( (p<.01) \) and reflects an overall decrease, from session one, in the number of references emitted by the two groups. The Treatment by Weeks interaction was also significant \( (p<.05) \). This interaction is shown graphically in Fig. 6. This effect is apparently the result of the experimental group starting out and ending treatment emitting more statements than the yoked control group subjects, but during sessions 2 through 7, they emitted less statements than did the yoked control group.

Repeated measurements analyses of variances were also performed on the absolute scores for each of the response class reported above. The findings of these analyses were identical with the results of the analyses which were performed on the percentage scores for each response class. The analyses of the absolute scores were not presented because they are repetitive of the percentage score findings and these latter scores depict the data in clearer, more easily understandable fashion.

Ward Rating Scales

In order to assess any behavioral changes in the subjects and to compare the three groups in amount of change, repeated-measurements
analyses of variance were performed on each of the four subscales, Withdrawal, Paranoid Belligerence, Thinking Disorganization, and Agitated Depression, of the Lorr Psychotic Reaction Profile. There were no significant Treatment, Weeks, or Treatment by Weeks interaction effects for any of the subscales. It is concluded from these results that there was no overall differences or changes during the course of treatment in the overt behavior of the subjects, between groups, as reflected by ward personnel ratings on the Lorr Psychotic Reaction Profile.

**Personality Measures**

The semantic differential used in this experiment employed eight concepts. Each subject rated each concept four times: (1) once before treatment, (2) halfway through treatment, (3) at the end of treatment, and (4) two days after treatment terminated. For each concept, one repeated-measurements analysis of variance was performed for the Evaluative factor, the Potency factor, and the Activity factor. Thus, there were three repeated-measurements analyses of variance for each concept.

The repeated-measurements analyses of variance performed on the concepts: "myself", "the good me," "my home," "the hospital staff," and "other patients on my ward" yielded no significant results for Treatment, Weeks, or the Treatment by Weeks variables for any of the factors. Those concepts which did yield significant results are discussed individually below.

**Myself - As Others See Me**

The repeated measurements analysis of variance performed for the Evaluative factor of this concept is summarized in Table 7. There was no Treatment or Weeks effects, but there was a significant Treatment by Weeks interaction (p<.05).

To ascertain the true nature of this interaction, simple analyses of
variance were performed at all four time points. There was no Treatment effect for the evaluative factor of this concept at time (1) or (2), but there was a significant \( p < .05 \) Treatment effect at the end of treatment (see Table 8). This effect reflects the experimental group's higher rating of themselves as compared to the yoked control group subjects and untreated group subjects. An analysis of variance performed on the ratings of this concept two days after therapy concluded, indicated that the groups no longer differed from each other (see Fig. 7).

The repeated measurements analysis of variance performed on the potency factor of this concept found that there was no significant Treatment of Weeks effect, but there was a significant Treatment by Weeks interaction, a simple analysis of variance was performed on each time rating. There was no significant Treatment effect at time (1) or at time (2). There was, however, a significant \( p < .05 \) Treatment effect at time (3), (see Table 10). This effect is the result of the experimental group Ss rating themselves as more potent as perceived by others, than did the two control groups whose scores paralleled each others and did not significantly differ. The analysis of variance performed on the post-treatment ratings yielded no significant differences between any of the groups.

A repeated-measurements analysis of variance performed on the activity factor for this concept yielded no significant Treatment effect, Weeks effect, or Treatment by Weeks interaction effect.

**Therapist**

Results of a repeated-measurements analysis of variance for the evaluative factor of the concept "The Therapist" are summarized in Table 11. There is no significant Treatment effect or Weeks effect. There is
a significant Treatment by Weeks interaction (p .05).

In order to assess this interaction, simple analyses of variance were performed at each time interval rating. The analyses performed on the pre-treatment rating scores and on the ratings obtained halfway through treatment on this concept showed no significant differences between any of the groups. An analysis of variance performed on the end of treatment ratings for the evaluative factor of this concept is summarized in Table 12. There is a significant Treatment effect (p .05) which is accounted for by the fact that the experimental group Ss rated the therapist more in a favorable direction than did the other group Ss. An analysis of variance performed on the post-treatment scores indicated that the groups did not differ significantly in their ratings of the therapist on the evaluative factor at that time.

Repeated-measurements analyses of variance performed on the potency and activity factors of this concept yielded no significant Treatment, Weeks or Treatment by Weeks effects.

The Bad Me

Repeated-measurements analyses of variance performed on the evaluative and activity factors of the concept "The Bad Me" yielded no significant results. A repeated-measurements analysis of variance on the rating for the potency scale for this concept showed no Treatment effect or Weeks effect, but there was a significant Treatment by Weeks interaction (see Table 12).

Analyses of variance were performed on each of the rating times in order to determine the cause of the interaction effect. The analyses done on the pre-treatment scores and those scores obtained halfway through treatment were not significant. An analysis of variance performed on the
end of treatment scores yielded a significant Treatment effect (see Table 13). This effect is graphically shown in Fig. 10. The effect is the result of the experimental group rating the concept "the bad me" as less potent than did the two control groups. A post-treatment analysis of variance indicated that the two groups did not significantly differ from each other on the potency factor for this concept.

Taylor Manifest Anxiety Scale

A repeated measurements analysis of variance performed on the TMAS scores yielded no significant effects for the Treatment, Weeks, or Treatment by Weeks variables.

Awareness

The awareness questionnaire revealed that every S in the experimental and yoked control groups was aware of the presence of the reinforcer, "mm-hmm", but not one S in either group could verbalize the contingency of the reinforcer. On the basis of these data, it is suggested that awareness was not a necessary factor for conditioning to occur. The effects of awareness, and its relationship to transfer of training, however, could not be explored because there was no "aware" group.
Table I

Mean Scores for Each Response Category

Positive Self-Reference Differences Scores

<table>
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<th>7</th>
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<th>Total</th>
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<td>25.1</td>
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<td>19.3</td>
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<td>-9.3</td>
<td>-7.2</td>
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<td>-11.4</td>
<td>-12.6</td>
<td>-9.9</td>
<td>-9.7</td>
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Negative Self-Reference Differences Scores

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<th>Total</th>
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<td>-14.2</td>
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<td>-3.6</td>
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Neutral Self-References Difference Scores

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Non-Self Reference Difference Scores

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Total Self References

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Table 2
Summary of Repeated Measurements Analysis of Variance performed on Positive Self-Reference Difference Scores

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Table 3

Summary of Reported Measurements Analysis of Variance of Negative Self-Reference Difference Scores

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Table 4

Summary of Repeated Measurements Analysis of Variance
Performed on Neutral Self-Reference Difference Scores

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### Table 5

Summary of Reported Measurements Analysis of Variance Performed on Non-Self-Reference Difference Scores

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Table 6

Summary of Repeated Measurements Analysis of Variance Performed on Total References

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Table 7

Summary of Repeated Measurements Analysis of Variance Performed on Evaluative Factor of Concept "Myself as Others See Me"

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Table 8

Summary of Analysis of Variance Performed on the 2nd of Treatment Ratings of the Evaluative Factor for the Concept "Myself as Others see Me"

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Table 9

Summary of Repeated Measurements Analysis of Variance Performed on the Potency Factor of the Concept "Myself as Others See Me"

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Table 10

Summary of Analysis of Variance Performed on the End of Treatment Ratings on the Potency Factor of the Concept "Myself as Others See Me"

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Table 11

Summary of Repeated Measurements Analysis of Variance Performed on the Evaluative Factor for the Concept "The Therapist"

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Summary of Analysis of Variance performed on the End of Treatment Ratings on the Evaluative Factor of the concept "The Therapist"

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**Table 13**

**Summary of Repeated Measurements Analysis of Variance on the Potency Factor of the concept "The Bad Me"**

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Summary of Analysis of Variance performed on the End of Treatment Ratings on the Potency Factor of the concept "The Bad Me"

<table>
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Fig. 1

Mean percentage difference scores from operant level for each response category.
Fig. 2 Positive self reference difference scores.
Fig. 3 Negative self reference difference scores.
Fig. 4 Neutral self reference difference scores.
Fig. 5 Non-self reference difference scores.
Fig. 6 Total references,
Fig. 7 Myself as others see me evaluative factor.
Fig. 8 Myself as others see me potency factor.
Fig. 9 The Therapist evaluative factor.
Fig. 10 The bad me potency factor.
Discussion

This study was concerned with the relationship between verbal conditioning and therapy. More specifically, it attempted to show that social approval, when contingent upon an individual's emission of positive self-references, leads to an increment in the subject's production of such self-references. In turn, conditioning of positive self-references was expected to lead to behavioral and personality changes.

The results of this present study show that those subjects reinforced for emitting PSR's produced a significantly greater number of PSR's than did subjects who weren't reinforced for emitting such responses. This result confirms the hypothesis that social reinforcement ("mm-hmm") contingent upon the emission of positive self-reference would lead to an increase in their production. This significant conditioning effect is consistent with the findings of studies (Layton, 1967; Moos, 1963; Rogers, 1960) where a specific response category was reinforced. There is, however, a critical difference between this study and that of Rogers in the way conditioning was achieved.

Rogers found that positive self-reference did not increase when reinforced, but rather that reinforcement served to maintain the frequency of positive self-references at a relatively stable level across time. His significant difference in PSR emission between his group reinforced and not reinforced for emitting PSR's was due to an extinguishing of PSR's when not reinforced. Rogers concluded that individuals come into therapy with preconceived set about therapy. They assume that they should talk about the negative aspects of their personality. When PSR's are not reinforced under this condition, they extinguish. Roger's argument is contrary to Skinner's (1957). Skinner proposed that specific verbal behavior like any type of overt behavior can be increased by making social
reinforcement contingent upon its emission.

The present study supports Skinner's argument and disagrees with that of Rogers, in that there was an increase from the operant level, in the percentage of positive self-references emitted when reinforcement was contingent upon them. There was a decrease in the percentage of positive self-references when they were not reinforced.

This study employed an excellent control procedure which enables us to have a clear picture of the effects of reinforcement. The fact that there were no differences between the systematically and yoked-reinforcement groups in the number of neutral self-references and negative self-references, but rather an overall decrease in their emission, is consistent with the argument put forth by Skinner (1957) that responses not reinforced tend to extinguish. This finding is of importance in that if changes are found on the personality measures and behavioral indices, they can be thought of as the result of the conditioning process.

Of all the responses rated, non-self-references was the only one which failed to be extinguished when conditioning was not contingent upon response emission. Non-self-references was the category of responses most often emitted. This is indicated by Fig. 1. It follows that since non-self-references are among the most frequent responses emitted during any conversation, they would have a partial reinforcement history that would make them highly resistant to extinction. This accounts for the fact that they did not extinguish in the experimental group. There was a significant treatment effect which is accounted for by a greater increase in the percentage of non-self-references emitted by the yoked control group than by the experimental group. Since non-self-references do occur so often in the course of a free verbalization setting (see Fig. 1), it
follows that even on the random reinforcement schedule employed by the yoked control group, they were the most likely response class to be reinforced. Thus, it seems likely that they increased in percentage in the yoked control group as a function of "coincidental" conditioning. The differences between the yoked control group and experimental group on the emission of positive self-references and non-self-references indicates that conditions for showing behavioral and personality changes were maximized in this study.

Yet despite highly successful conditioning of positive self-references there was no generalization to overt behavior as measured by ward personnel measurements. In all, there were ninety-six possible analyses performed of which four were significant (p<.05). This finding does not differ greatly from what would be expected by chance. All four significant analyses, however, occurred at the end of treatment and this probability was not a chance occurrence. These changes which were detected on the semantic differential were in the predicted direction, but occurred on concepts of lesser import and can be explained as the result of effects other than the conditioning per se.

Among the ratings which changed were the evaluative and potency factors on the concept "myself - as others see me". These changes may possibly be the result of the quality of attention this group received from the experimenter. In reinforcing positive self-references, the therapist gave tacit approval to the S for saying that he is good. As the frequency of PSR's increased, the S received more and more approval from the therapist.

The concept "The Therapist" was increased in evaluative ratings by the experimental group, i.e. they viewed the therapist in a more positive direction, while there was no significant change, across time, in ratings
of the therapist by the two control groups. The therapist explicitly gave approval to experimental group subjects for being good and likable by reinforcing P3R's. This could be thought of as fostering a positive relationship. The therapist did not give approval for anything in particular to the yoked control group. In fact, he responded less to self-references than to non-self-references, perhaps indicating to the yoked control group. In fact, he responded less to self-references than to non-self-references, perhaps indicating to the yoked control group subjects that he was not particularly interested in them as persons with whom he could have a good relationship.

The concept "Bad me" was lowered in potency ratings in the experimental group and slightly increased in the yoked control group from pre- to end-of-treatment ratings. The significant effect is the result of the experimental group rating the "Bad me" as less potent. This effect is an indication that the reinforcement of P3R's led the experimental group subjects to rate the "Bad me" lower on the potency scale after conditioning.

In general, the results of these criterion personality measures might suggest that changes in personality measures can be brought about through conditioning. The relevancy of the measures which changes, however, is questionable as is their stability. Within forty-eight hours after treatment terminated, there were no differences between the groups in their ratings on the personality scales.

Since the conditioning effect led only to minor and transitory personality changes, it can be concluded from this study that increasing the frequency of positive self-reference responses does not lead to lasting behavioral or personality changes. This finding supports Harmatz's (1967) statement that increasing the frequency of a response does not change the individual's verbal repertoire in such a way that he then responds differently
after conditioning than he had prior to the conditioning procedure.

The weak generalization effects to the personality scales are confounded by the fact that the particular personality tests used to measure change, though among the best instruments available, are not the most sensitive to change. It cannot be stated definitely that there were not, in fact, subtle personality changes occurring to which the measures were insensitive. It is obvious however, that the effects of increasing the frequency of positive self-references are not strong enough to produce enduring change. This result fails to support the hypothesis that reinforcing the frequency of positive self-references leads to stable personality change.

It is concluded that increasing the emission of positive self-references does not lead to direct behavioral or personality change because it does no more than reinforce the response highest in the subjects repertoire and helps him discover nothing new about himself. This study suggests that rather than reinforce known responses in an individual, it would be beneficial to teach him new responses.

In order to teach the individual new responses, several techniques could be employed. In the traditional therapy setting, for example, the subject is told or helped to look for the correct responses. If some instructional set were given to the subject which could define and structure to some degree the task situation, it would allow the subject to focus more readily on relevant aspects of the task and would lead to elimination of many potential, but irrelevant, hypotheses he might otherwise entertain. His greater receptivity to the relevant cues in the situation maximizes the probability of performance change in verbal behavior and of reporting awareness, perhaps by increasing the discriminability of the response class. Besides instructional sets, interpretation and role playing can
be utilized as methods of getting the patient to emit new responses. Once the desired new responses are emitted, operant procedures can then be utilized to reinforce that response. Besides reinforcing and conditioning desired responses, negative reinforcements can be made contingent upon undesirable responses, as a means of extinguishing them.

This study has argued that the therapeutic process is a more complex matter than simply increasing the frequency of a response class. It has argued that other procedures than operant ones are necessary to elicit new responses from the subject. Once the new responses are emitted then operant procedures may be employed as a means of conditioning these new responses.
Summary

Several studies have suggested that increasing the frequency of a specific response class, for example, positive self-references, may lead to changes in overt behavior and changes on personality measurements. It has been suggested here that this phenomenon has not been demonstrated consistently because previous research investigations in verbal conditioning have been carried out in laboratory settings that are unlike therapy. Therefore, it has been difficult to realistically assess the verbal conditioning process as it relates to therapy.

This study constructed a verbal conditioning situation very much like therapy in such relevant dimensions as patient selection, duration of treatment, and length of sessions. Twenty-seven hospitalized psychiatric patients diagnosed as Schizophrenic Reaction, Chronic, Undifferentiated type were randomly assigned to one of three treatment groups.

The experimental group Ss were seen in a therapy-like setting and were given instructions to verbalize freely without any comments or questions from the therapist. Each subject was seen in eight weekly sessions for thirty minutes per session. Every time the S emitted a positive self-reference he was reinforced with an "mm-hmm" and a nod of the head.

The yoked control group Ss received the same number of social reinforcements ("mm-hmm" and head nod) and in the same temporal relation as those of the experimental group subjects with whom they were yoked. Because of the yoking procedure, the reinforcements were randomly distributed.

The invited control group consisted of individuals who were told that they would be seen in therapy as soon as a therapist and/or time became available.

All Ss were administered the Semantic Differential and Taylor Manifest Anxiety Scale prior to treatment, halfway through treatment, at the con-
Elusion of treatment, and two days after the end of treatment. In addition, experimental group Ss and yoked control group Ss were administered an awareness of conditioning questionnaire at the termination of treatment. Two ward nurses independently rated each S prior to therapy, halfway through treatment, and at the conclusion of therapy on the Lorr Psychotic Reaction Profile.

Results indicated that significant conditioning of positive self-references was achieved when social reinforcement was contingent upon their emission; while noncontingent approval did not lead to conditioning of PSR's. Despite the successful conditioning, there were only weak personality changes at the end of treatment. These changes extinguished within 48 hours of the termination of treatment.

It was concluded that increasing the frequency of a subject's emission of positive self-references merely strengthens the existing verbal repertoire rather than changing that repertoire. In order to produce generalizable changes in a patient, it may be necessary to teach him new response categories.
Awareness Questionnaire

I would like to ask you some questions about the experiment you were just in. In answering these questions, it is important that you think back over the sessions we have spent together.

1. What do you think the purpose of these sessions was?
2. How did you go about deciding what things you would talk about?
3. Did you think you were talking about certain things more than others?
   What things? Why?
4. Did you feel that you were supposed to talk about any particular things?
5. Were you aware of anything else that was going on while you were talking?
6. Were you aware of anything about me?
7. Were you aware that I said anything?
8. Did you hear me saying "mm-hmm" at any time during the sessions?
9. What did my saying "mm-hmm" mean to you?
10. When did I say "mm-hmm"? Tell me more about it.
11. Did you try to figure out why I was saying it?
12. What idea did you have about what was making me say "mm-hmm"?
13. When thinking about what things you were going to talk about, did you think my saying "mm-hmm" had anything to do with what you talked about? What?
14. To be asked if question 13 is answered yes?
   Did the fact that you realized this have any effect on what you talked about?
15. Did you think you were talking about certain kinds of things more often than others?
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