The Effects of Hypnosis and a Control Procedure on Verbal Conditioning: A Hypothesis, Some Preliminary Data, and Theoretical Speculation*

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Abstract

The hypothesis tested in this study was that a prior hypnotic relationship with an experimenter (E) would facilitate the immediately subsequent verbal conditioning out of “hypnosis,” of the same subject to a greater degree than an equivalent control procedure not defined to the subject as “hypnosis.” The hypothesis appears to be partially confirmed. The implications of such a procedure for psychotherapy or behavior therapy are discussed.

Holz and Azrin (1966) noted that the results of verbal conditioning experiments have not been “substantial or consistent.” From a methodological point of view, they questioned the adequacy of the social reinforcers used and suggested the potential importance of the nature of the interaction between experimenter and subject. They also recognized the importance of instructions and their roles as discriminative stimuli in conditioning situations. Their logical analysis of the problems of response class, thematic control, and response units while intellectually interesting has not discouraged empirical studies.

Krasner (1965) defines verbal conditioning as "the systematic application of social reinforcements to influence the probability of another person emitting a specifiable verbal behavior." The effects of a "hypnotic relationship" on susceptibility to verbal conditioning seem worth investigating for several reasons:

1. In the context of a set of procedures labelled "hypnosis" with highly suggestible subjects, suggestions given may lead to unusual effects, for example, physiological changes, etc., (Barber, 1969) which may increase the attention value and prestige of the "hypnotist."

2. Recently Cairns (1969) has hypothesized that at least with human subjects, instructions and attention may be major variables in enhancing the strength of social reinforcers or prestige factors. Barber's (1969) empirical formulation of "hypnosis" regards attention and instructions as major antecedent variables.

3. Two previous studies (Wickramasekera, 1969a, 1970) appeared to indicate that sensory restriction procedures increase "hypnotic" susceptibility, as measured by the Stanford Scales, and hypothesized that the "hypnotic relationship" may lead to an increase in the social reinforcer value or prestige of an experimenter.

4. Freud and nearly all other traditional psychotherapists recognize the "relationship," or more specifically the "transference" aspect of it, as the major vehicle for reshaping "personality." The "transference" which Freud (1938) later came to recognize as a form of hypnotic relationship, established the analyst as an influential person in the patient's life. A "hypnotic relationship" is a miniature telescoped model of a "transference" (Gill and Brenman 1959), according to one psychoanalytic theory of hypnosis. In a theoretical paper (Wickramasekera 1969b) it was hypothesized that the major effect of the "positive transference relationship" was to increase the analyst's prestige or social reinforcer value, which in turn increased the analyst's ability to manipulate the behavior of the analysand. If this is true then "hypnotic relationship" should increase postinduction susceptibility to verbal conditioning.

Quay (1959) demonstrated that "highly personal and emotionally charged memories can be manipulated by another person in an interview with very minimal verbal participation selectively placed after certain classes of these memories" (p. 257). The present study was conceptualized as a replication and extension of the Quay (1959) study. In his study, "thirty-four college students were asked to recall events from their early childhood. After a baseline was established in an initial operant period, sixteen of the Ss were reinforced by E saying uh-huh for memories..."
concerned with members of S's family. Eighteen of the S's were reinforced for memories not concerned with the family. In both groups the reinforcing stimulus served to increase the proportion of memories in the reinforced category when the reinforcement period was compared to the operant period" (p. 257). The recall of early childhood memories plays a major role in psychoanalytic therapy. Quay (1959) suggested that the prestige of the experimenter could be a factor in the effectiveness of the verbal conditioning. The present study attempted to focus on this prestige variable, conceptualizing it in terms of the strength of social reinforcement. The purpose of this study was to compare the effectiveness of two procedures ("hypnosis" vs. task motivational instructions) which appear to generate prestige. The specific hypothesis tested in this study was that a prior "hypnotic induction" by an experimenter (E) would facilitate the immediately subsequent verbal conditioning out of "hypnosis," of the same subject to a greater degree than an equivalent control procedure (Task Motivational Instructions) not defined to the subject as "hypnosis."

Subjects

The subjects in the study were 36 female junior college students, 18-20 years of age, who volunteered to participate in a study of "hypnosis, concentration, and memory." Subjects were screened for hypnotic susceptibility on the Harvard Scale, which was administered by a male research assistant. Subjects were confined to those with scores between 9-12 on the Harvard Scale (superior hypnotic subjects). Subjects reporting current psychiatric contacts or with a record (in University Record Office) of psychiatric problems were eliminated from the pool of subjects.

Design and Procedure

This entire study, except for the preliminary screening, was conducted in E's office at the Mental Health Clinic.

An equal number of subjects were assigned randomly to a hypnosis group, (N = 18), and a task-motivational group, (N = 18). Within each of the above major groups, subjects were assigned equally and randomly to two subgroups ("family memories," N = 9, "nonfamily memories," N = 9). During the following conditioning procedure, subjects were instructed to verbalize events from their early childhood as they came to mind. A baseline was established for each subject in a free operant period; then a minimal level of verbal reinforcement (experimenter saying uh-huh) was
introduced to reinforce selected memory topics. The hypnosis or task motivational instructions were presented immediately before or after the baseline procedure in counterbalanced order.

The hypnotic procedure consisted of administering the standardized hypnotic induction procedure described by Barber (1969) and followed immediately by the Barber Suggestibility Scale (1969). The control procedure consisted of administering the task-motivational instructions described by Barber (1969), followed immediately by the Barber Suggestibility Scale. The only departure from the specific procedures described by Barber was to tell the subjects in the control group before administering the task motivational instructions that they would not be hypnotized. This is crucial because the definition of the situation as “hypnosis” is one of the effective independent variables in the hypnotic induction (Barber 1969). Only the objective part of the Barber Suggestibility Scale was scored. Subjects were out of hypnosis during the verbal conditioning and no posthypnotic suggestions relevant to verbal conditioning or anything else were given when the subjects were in hypnosis. As in the Quay study, the reinforcing stimulus was a flat, noncommittal “uh-huh” spoken in a low conversational tone. All subjects were seated on a recliner facing away from E during all the procedures. The responses of all subjects were tape-recorded.

The hypnosis group (N = 18) was composed of nine subjects one subgroup for which memories concerned with their families were reinforced and nine subjects in a second subgroup for which memories concerned with people and events outside the family were reinforced. The task motivational group (N = 18) was identically composed and treated with respect to the above reinforcement procedures.

The procedure described by Quay (1959) was used to establish the reliability of the family and nonfamily classes of memories. The reliability of the categories was found to be high and they were found to provide adequate initial operant levels.

The experimental period was divided into two half-hour sessions generally one week apart. The first ten minutes of the first half hour were used to establish the operant level (relative frequency) of the memory category to be reinforced. This procedure served to make each subject his own control. At the end of the first half hour, the subject was interrupted and asked to return one week later for another half hour. The Ss in the task motivational subgroups (family vs. non family) and the hypnosis subgroups (family vs. nonfamily were all treated in the manner described above.
Apart from the insertion of the hypnosis and task-motivational procedures prior to the reinforcement procedure, the present study is identical in method to the Quay study.

Results

Reliability of memory categories:

Quay reported that the classification of memories of E when tested by a second judge showed a percentage of agreement that ranged between 90% and 100%, with a mean of 96%. Using a similar procedure for the present data the range of agreement was between 100% and 92% with a mean of 94%.

Comparison of Operant and Reinforcement Periods:

In order to test the hypothesis that reinforcement would increase the frequency of memories in the reinforced category, family or nonfamily, the relative proportion in the free operant period was compared to the relative proportion in the reinforcement period. The reinforcement period was defined as that part of the total experimental hour which followed the delivery of the second reinforcement.

The task-motivational group was composed of two subgroups. In the family subgroup, seven of the nine subjects gave a higher proportion of family memories after reinforcement. The probability of this event as indicated by a one-tailed sign test is .09 (Siegel 1956). A one-tailed test was used because the direction of the change was predicted. For the nonfamily group, eight of the nine subjects gave a higher proportion of nonfamily memories after reinforcement. This event has a probability of .02 with a one-tailed sign test.

In both of the hypnosis subgroups, all the subjects (nine out of nine) gave a higher proportion of memories in the reinforced category. The probability of these events as indicated by one-tailed sign tests were both .002.

It should be noted that while both types of subgroups are experimental groups, the mutually exclusive, all-inclusive nature of the memory categories makes them at the same time control groups for each other. As Quay noted “if one should argue that the relative frequency of family memories would naturally rise as a result of S becoming more at ease with E as the interview proceeded, then one must also explain the drop in relative frequency of family memories when nonfamily memories are reinforced (1959, p. 256).”
Comparison of Hypnosis and Control Treatments

The magnitude of the change (from baseline to reinforcement) ranged from — .31 to .30 in the task-motivational group and from .04 to .44 in the hypnosis group. Nonsignificant Mann-Whitney U tests (Siegel 1956) indicate that the amount of change was not related to the categories family and nonfamily in the task-motivational and hypnosis groups respectively.

For family memories, there was no significant difference during the operant period between the task-motivation and hypnosis groups. For family memories after reinforcement, there was a difference between the task-motivation and hypnosis groups significant at the .02 level (Mann-Whitney U test). For nonfamily memories there was no significant difference during the operant period between the task-motivation and hypnosis groups. For nonfamily memories after reinforcement, the difference between the hypnosis and task-motivation groups was significantly only at the .10 level (Mann-Whitney U test).

The following observations are on subjects reinforced for producing family memories in the task-motivation group. The subject that conditioned the most poorly produced nine family memories during the operant period and twenty family memories during the reinforcement period. On the other hand, the subject that conditioned the best produced seven family memories during the operant period and thirty-eight family memories during the reinforcement period. The following results were obtained from subjects reinforced for producing nonfamily memories in the task-motivation group. The subject that conditioned the most poorly produced six nonfamily memories during the operant period and twenty-eight nonfamily memories during the reinforcement period. On the other hand, the subject that conditioned the best produced six nonfamily memories during the operant period and forty-one nonfamily memories during the reinforcement period.

The following results stem from subjects in the hypnosis group who were reinforced for producing family memories. The subject who conditioned most poorly produced seven family memories during the operant period and twenty-nine family memories during the reinforcement period. The subject who conditioned best produced six family memories during the operant period and sixty-five family memories during the reinforcement period. The following results were obtained from subjects in the hypnosis group who were reinforced for producing nonfamily memories. The subjects
who conditioned the most poorly produced twelve nonfamily memories during the operant period and thirty-six nonfamily memories during the reinforcement period. The subject who conditioned the best produced ten nonfamily memories during the operant period and fifty-eight nonfamily memories during the reinforcement period.

Quay reports that of thirty subjects who returned a post experimental questionnaire, only one person indicated an "awareness" of the contingency between his response and the reinforcing stimulus.

The issue of subject awareness or ability to verbalize the response reinforcement contingency was not evaluated because of the unavoidable delay (to avoid revealing the purpose of this study to those Ss who had as yet not participated) in checking for awareness, and because in the context of a study like this, awareness would have to be inferred from subject responses to progressively more suggestive interview questions (Bandura, 1969) with at best an unreliable procedure (Weinstein and Lawson, 1963).

There were no significant differences (Mann-Whitney U test) on the Barber Suggestibility Scale between the family and nonfamily subgroups both in the task-motivational and in the hypnosis treatments. There were also no significant differences (Mann-Whitney U test) on the Barber Suggestibility Scale between the task-motivation groups (composed of combined subgroups of family and nonfamily) and the hypnosis groups (also composed of combined subgroups of family and nonfamily).

Discussion and Theoretical Speculation

The results of this study should be interpreted cautiously because of the possibility of experimenter bias and these results should be regarded as only suggestive. But the topic of this study seems a very crucial one for behavior therapy.

Previous studies (Clark and Long, 1964) have not been able to demonstrate a consistent relationship between conditionability and suggestibility. In the present study, highly suggestible subjects were found to be also verbally conditionable. Highly suggestible subjects may be conceptualized as subjects very responsive to instructional sets or susceptible to control by verbal stimuli.

It is hypothesized that a subject who scores high on a hypnotic or suggestibility scale is a subject whose behavior in general is highly susceptible to control by verbal stimuli. The subject’s experience of the unusual
effects of the hypnotist’s words on his behavior increases the hypnotist’s attention value, prestige, or social-reinforcer effectiveness. It was hypothesized that after such a sequence of events, the hypnotist’s ability to condition the subject’s verbal or nonverbal behavior will be generally increased. It appears that for some human subjects, cognitive variables (instructional sets) may be complexly related to reinforcement variables. This implies that a highly suggestible subject may condition or learn poorly if his superior susceptibility to control by instructional sets is not used.

A number of studies with children and adults have sought to increase the strength of social reinforcers. The results of these studies have been interpreted in terms of the deprivation of social stimuli (Gewirtz and Baer, 1958), the manipulation of anxiety (Walters and Ray, 1960). There have been informal attempts to increase a therapist’s reinforcer value by his association with primary reinforcers (Patterson, 1965a, 1965b).

The present study suggests that a set of interactions between E and S labelled “hypnosis” may increase the effectiveness with which E can later condition some aspects of the verbal behavior of certain subjects. The

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<th>Harvard Group Scale</th>
<th>Task Motivation Group N = 18</th>
<th>“Family Memories” Group N = 9</th>
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<td>“Non-Family Memories” Group N = 9</td>
<td>“Family Memories” Group N = 9</td>
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<td>Hypnotic Induction Group N = 18</td>
<td>“Non-Family Memories” Group N = 9</td>
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**Table 1**
GENERAL EXPERIMENTAL DESIGN

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process through which the experimenter's behaviors become more effective may simply be that the S pays more attention to the E's behavior. As Cairns (1969) suggests, "The seemingly contradictory operations of (a) interacting with the child in a threatening fashion, (b) interacting in a friendly fashion, and (c) not interacting at all have been shown to be successful in making the experimenter's comments more effective. Possibly these disparate procedures work by virtue of a common mechanism: whether or not they serve to heighten the probability that the child attends to the experimenter's behavior. Once this orientation is accomplished, regardless of the operations required to bring it about, the effectiveness of the comments will be enhanced (p. 13)."

The above formulation is not inconsistent with the clinical observation that before the psychotherapist, witch-doctor, brain-washer, or counselor can effectively influence the behavior of a subject he needs to become a "significant person" in the subject's life. S then becomes and stays more accurately tuned in to the behaviors of E. It does not seem impossible to define and measure operationally such a concept, even in a traditional therapy session, with measures like eye fixation, postural orientation, and so forth.

It has been hypothesized (Wickramasekera, 1969 b) that the effective element in the establishment and analysis of "transference" in psychoanalytic therapy was the arrangement of procedures to increase the analyst's social-reinforcer value and the use of this increased influence to shape the behavior of the patient. Psychoanalytic theory considers a hypnotic induction as the temporary establishment of a "transference relationship" (Gill and Brenman 1959; Weitzenhoffer, 1957). In a sense then the present study represents a miniature analogue of the psychoanalytic situation and demonstrates the reliability with which the content of verbal behavior can be influenced in a relatively brief period of time.

It is also interesting to note that Barber's task-motivational instructions were associated with significant conditioning effects almost equal to those associated with labeling a procedure, "hypnosis." The prediction from Barber's formulation would appear to be that defining the pre-reinforcement interaction to the subject as hypnosis or task-motivational instructions would not lead to any differences in postinteraction susceptibility to verbal conditioning.

In view of the unreliability (Holz and Azrin, 1966) of verbal conditioning phenomena particularly when minimal reinforcers (uh-huh) are used, it would be interesting to determine if task-motivational instructions and the
BSS would be significantly more effective than a no-treatment (no instructions or interactions prior to verbal conditioning) control. If it is, we may have in hypnosis and task-motivational instructions, relatively objective procedures that appear to increase the reliability with which verbal conditioning can be demonstrated.
References

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