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The Conditioning of Verbal Behavior with Negative Cultural Connotations

Zedek, Meira Ellen

Boston University

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Boston University
THE CONDITIONING OF VERBAL BEHAVIOR WITH
NEGATIVE CULTURAL CONNOTATIONS

by

Meira Ellen Zedek

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1958
Approved by
the Committee

Chairman
Professor of Clinical Psychology

A. William Fire
Professor of Clinical Psychology

Austin W. Bechley
Professor of Psychology
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CHAPTER I

INTRODUCTION

Verbal behavior is learned and modified through interaction with a verbal community. This process takes place with or without the awareness of those who participate in the verbal interchange. The purpose of this research is to study the effect of verbal reward or reinforcement on verbal behavior, and to explore personality characteristics that are related to the presence or absence of awareness of the relation between the verbal reinforcement and the verbal behavior.

The term "verbal behavior" has undergone many changes of meaning in the direction of increased generality and inclusiveness. Ruesch\(^1\) considered verbal behavior as only one of the many channels of communication. He therefore reserved the term verbal for vocal, written, and other symbolic sign language, and defined all other means of interpersonal communication as nonverbal. Skinner\(^2\), who used the term verbal behavior in a very broad sense, subsumed all the various kinds of communicative behavior under this term.


Irrespective of these different definitions, the verbal behavior under investigation in this research is limited to vocal verbal expression.

The understanding of verbal behavior increased considerably when the study of its relatively static elements was supplemented by a more dynamic approach. Linguists and logicians have studied verbal behavior as a product of man, which has an independent existence of its own. Psychologists have been interested not in the end product alone, but also in the behavior as a dynamic process. The study of language was supplemented by the psychology of the speaker and listener, and the interrelation between them. With regard to this, Skinner\(^3\) states that verbal behavior is possible only within a verbal community by which it is affected and which it affects in turn. The content, form, and timing, of verbal behavior is largely determined by the reaction it receives from the verbal community.

The conditions under which verbal behavior is learned and modified are of interest to psychology as well as to psychiatry. Psychopathology is not only expressed by disturbed verbal behavior, but is, to a certain extent, identical with it. In psychotherapy itself, the verbal communication between the patient and the therapist is considered one of the main media of therapy, and frequently

\(^3\)Ibid., p. 226.
changes in the verbal behavior of the patient precede changes in his behavior in other areas.

The study of verbal behavior as an interpersonal process is complicated by the fact that a multitude of variables act simultaneously to determine the behavior. Unless specific variables are isolated and controlled, the analysis and prediction of the relationship between these variables is impossible. A theoretical framework, which specifies these variables and their interrelation, is necessary for the empirical study and the ultimate prediction and control of verbal behavior.

Learning theory lends itself particularly well to the analysis of verbal behavior. Within the framework of operant conditioning, verbal behavior is conceived of as being constantly reinforced through the mediation of people. The study of verbal conditioning focuses on the effect of reinforcement, as an independent variable, on verbal behavior, as a dependent variable.

Certain aspects of psychotherapy can also be understood in terms of these two variables. Changes in the verbal behavior of the patient can be related to the selective reinforcement of these verbalizations by the therapist. The therapist tries to induce the patient to verbalize feelings and thoughts which have become associated with anxiety and aversive conditioning. The attentive and non-punishing behavior of the therapist acts as a reinforcer.
which eventually extinguishes the aversive conditioned response which had become associated with the behavior. The kind of reinforcers used most frequently, both in general social interaction and in psychotherapy, is the class of generalized reinforcers. Skinner\(^4\) defines these as any stimuli which had at one time preceded a variety of primary reinforcers. To this category belong money, attention, approval, etc. Dollard and Miller describe the process of verbal change in psychotherapy in relation to generalized reinforcers as follows:

Talking despite anxiety, talking while anxious, is the patient's work. He must be kept at this work if therapeutic results are to occur. Like any other habit, talking while anxious must be rewarded strongly so that net balance of reward is in favor of talking, else the patient will remain silent or will hit upon lines of sentences which do not produce anxiety. The most obvious reward for talking is the full, free, and exclusive attention of the therapist. Usually the patient has a strong need for such attention.\(^5\)

One of the characteristics of reinforcement is that its effect can be entirely unconscious and automatic. Learning may occur when the person involved is completely unaware of the fact that he is modifying his behavior in response to stimuli controlled by others. Dollard and Miller\(^6\) claim that the automatic effect of reinforcement

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\(^4\)Ibid., p. 53


\(^6\)Ibid., p. 288
helps to explain complex processes such as the acquisition of language, attitudes, and social behavior, a large part of which are never consciously learned.

In the therapy situation the patient is often completely unaware that changes in the content and tone of his verbalizations are related to the selective reinforcement given by the therapist. Part of the therapeutic effort is usually directed toward making the patient aware of his pattern of behavior and the stimuli he is responding to, which are often not present in his immediate life situation, but have been so effective as reinforcers in the past that he is still responding to them automatically.

Although "learning without awareness" accounts for a large proportion of human learning, there seem to be individual differences between people with regard to the degree of awareness which they evidence. Some people seem to be more aware of the stimuli they are responding to than others. It could well be that degree of awareness is related to personality differences as well as to the type of behavior that is being learned.

The aim of this research is to study the specific relationship between a generalized reinforcer connoting attention, and changes in verbal behavior that has been aversively conditioned. It will also explore personality characteristics that are related to degree of awareness of the relationship between the reinforcement and the
conditioned verbal behavior.
CHAPTER II

OPERANT CONDITIONING OF VERBAL BEHAVIOR

I. INTRODUCTION

There has recently been an increasing interest, in the psychological literature, in the study of variables relevant to changes in verbal behavior. The verbal behavior that was studied did not involve a conscious effort to learn a specific task, but was a more or less free communication concerning a particular issue. The studies that will be reviewed in this chapter used the method of operant conditioning to explore the effect of a specific reinforcer on specific verbal behavior. The experimental situation was usually designed in such a way as to provide the subjects with an opportunity to give the desired verbal responses. These responses were then reinforced and the changes in the frequency of the reinforced behavior were analyzed.

Taffel\(^1\) used an experimental design which was followed in several other studies, and which will therefore be described at greater length. He studied the effect of the reinforcers "good" and a light flash on the frequency of use of the personal pronouns "I" and "We" in a sentence.

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construction test. Each subject received consecutively eighty cards that contained a past tense verb printed in the center and the pronouns I, We, You, He, She, They, printed underneath. Each card contained a different verb and presented the six pronouns in different order. The instructions to the subjects were to make up sentences beginning with one of the pronouns on the card and including the verb. The subjects were assigned randomly to two experimental groups and one control group. In both of the experimental groups the first twenty sentences were not reinforced, and the frequency of use of the pronouns "I" and "We" in these sentences was considered as the operant level of responding. From the twenty first sentence on, one experimental group was reinforced with a light flash following sentences beginning with "I" or "We". The other experimental group was reinforced with the verbal stimulus "good" said by the experimenter whenever the subjects started a sentence with the pronouns "I" or "We". The control group did not receive explicit reinforcement. The results showed that in the experimental group that was reinforced with the verbal stimulus "good", the pronouns "I" and "We" were used with higher frequency from the twenty first trial on, as compared to the frequency with which these pronouns were used in the control group. No difference was found between the control group and the experimental group which was reinforced with a light flash.
None of the subjects in the two experimental groups was aware of the contingency of the reinforcement on the pronouns "I" and "We".

Most of the studies of verbal conditioning have dealt with verbal behavior that had either neutral or positive cultural connotations. The verbal behavior itself has represented different levels of complexity in terms of grammatical form and in terms of the personal meaning of the behavior. The reinforcement used most often has been of the type of generalized reinforcers indicating approval or attention. The following studies will be reviewed in terms of the basic variables that operate in verbal conditioning.

II. THE CONDITIONED VERBAL BEHAVIOR

The behavior manipulated and observed in these studies varied from very specific verbal responses to broad classes of verbal behavior. The applications that can be made from these studies depend, to some degree, on the generality and complexity of the behavior that was studied.

Greenspoon2, Mandler3, and Sidowski4, studied the changes in frequency of occurrence of plural nouns when


these responses were reinforced. This was a rather specific class of verbal responses, as the only basis for generalization was a particular grammatical form. The learned behavior itself had only minimal personal meaning. Of this category were also the studies by B. R. Sarason\(^5\) and I. G. Sarason\(^6\) who conditioned the use of verbs and "activity" verbs.

On a higher level of complexity, in terms of the more personal meaning of the verbalization, was the behavior studied by Cohen et al\(^7\), Grossberg\(^8\), Hartman\(^9\), and Klein\(^10\).


They all conditioned the use of the personal pronouns "I" and "WE" in sentence construction tests. Although grammatically simple, this verbal behavior had much personal meaning in so far as it represented statements of a self referential nature.

Much more complex behavior was studied by Hildum and Brown\textsuperscript{11}, who conditioned attitudes; Salzinger and Pisoni\textsuperscript{12}, who conditioned statements of affect; Nuthman\textsuperscript{13}, who manipulated the frequency of "self acceptance" statements; Verplanck\textsuperscript{14}, who conditioned opinions; and Krasner\textsuperscript{15}, who conditioned statements referring to "mother" in a story-telling situation. The verbal behavior manipulated in these studies had as a basis of generalization a broad class of responses interrelated only by their general meaning. The behavior was of a highly personal nature in so

\begin{itemize}
\item \textsuperscript{12}K. Salzinger & Stephanie Pisoni. Reinforcement of affect responses of schizophrenics during the clinical interview. \textit{J. abnorm. soc. Psychol.}, 1958, 57, 84-90.
\item \textsuperscript{13}Anne M. Nuthman. Conditioning of a response class on a personality test. \textit{J. abnorm. soc. Psychol.}, 1957, 54, 19-23.
\item \textsuperscript{14}W. S. Verplanck. The control of the content of conversation; reinforcement of statements of opinion. \textit{J. abnorm. soc. Psychol.}, 1955, 51, 668-676.
\item \textsuperscript{15}L. Krasner. A technique of investigating the relationships between behavior cues of examiner and verbal behavior of patient. Paper read at Amer. Psychol. Assoc. New York, September, 1957.
\end{itemize}
far as affect, opinions, and self acceptance, constitute an important part of the self percept.

A related problem is whether it is possible to change opinions and attitudes that are already well established, by reinforcing others that have an opposite meaning or connotation.

Ekman\(^{16}\) studied the effect of reinforcement on the frequency of occurrence of anti-capital-punishment statements. His sample was limited to people who were selected on the basis of their undecided opinions about capital punishment. It would have been interesting to see whether successful conditioning would have been observed also with people who had pronounced pro-capital-punishment opinions.

Binder, McConnell, and Sjoholm\(^{17}\), studied the effect of different reinforcing agents on the conditioning of mildly hostile, past tense verbs, which represent, to a certain extent, verbal behavior with negative cultural connotations. They found that the use of mildly hostile responses increased with reinforcement, and that conditioning was greater with a reinforcing agent who was perceived as permissive, than with another who was perceived as


Further investigation of the differential effect of the personal and cultural connotations of the conditioned verbal behavior on the process of conditioning, is needed.

III. THE EXPERIMENTAL SITUATION

In the majority of studies, the experimental situation was defined as a research project in which the participants were the experimenter and the subject. This definition has a particular cultural meaning which tends to affect behavior. To be cooperative in scientific research and to "do well" are reinforcing values in Western culture and might well account for some of the changes in behavior that occur. The successful conditioning of nouns, verbs, and opinions, could be related not only to a specific reinforcer, but also to the reinforcing value of certain experiment and test attitudes.

Only a few studies abandoned the laboratory setting for situations common in everyday life. In a study by Verplanck\textsuperscript{18} statements of opinions were conditioned successfully in an ordinary conversation among friends, one of whom gave reinforcing stimuli without the knowledge of the others. Salzinger and Pisoni\textsuperscript{19} interviewed schizophrenic

\textsuperscript{18} Verplanck, loc. cit.

\textsuperscript{19} Salzinger & Pisoni, loc. cit.
patients concerning their stay in the hospital. In the course of the interview, they reinforced statements of affect and observed the increasing frequency with which such statements were made.

Individual differences between reinforcing agents seem to be another important variable in the conditioning process. In the study by Binder, McConnell, and Sjoholm, a higher degree of conditioning was observed when the reinforcing agent was a permissive female experimenter than in the case where the experimenter was an authoritative male. Differences like this might account for some of the contradictory results reported in studies of verbal conditioning, particularly those in which conditioning was not successful.

IV. THE REINFORCING STIMULI

The most frequently used reinforcing stimuli were of the class of generalized reinforcers. The verbal stimulus "Hm Mm" was used in a number of studies under the assumption that it indicated attention and approval. It is interesting that in the study by Mandler and Kaplan those who interpreted "Hm Mm" as disapproval, decreased the frequency of the reinforced behavior, whereas those who interpreted it

\[^{20}\text{Binder, McConnell, \& Sjoholm, loc. cit.}\]

\[^{21}\text{Mandler \& Kaplan, loc. cit.}\]
as approval increased the use of the particular response.

Several other verbal and non verbal stimuli were used as reinforcers, such as "good", a smile, a head nod, and combinations of verbal and non verbal stimuli.

Mechanical reinforcers were used in some studies, but the action of those was more that of signs and cues than that of generalized reinforcers. Greenspoon\textsuperscript{22} and Sidowski\textsuperscript{23} used light as a reinforcer and observed behavioral changes in the predicted direction. Taffel\textsuperscript{24} and Nuthman\textsuperscript{25} used light and did not obtain the predicted changes in behavior. The reason for these contradictory results might be the fact that in the first two studies, rather simple verbal behavior, such as plural nouns, was reinforced, and an impersonal reinforcer, acting as a cue, might have been sufficient to effect a change in behavior. In the latter two studies, the conditioned verbal behavior was more complex, such as "I" and "We" pronouns and statements of "self acceptance". These were meaningful verbal communications and therefore only a reinforcer that could be related to success or failure of the communication was effective.

The effect of a particular reinforcer is thus closely related to the meaningfulness of the conditioned verbal behavior.

\textsuperscript{22}Greenspoon, \textit{loc. cit.}  \textsuperscript{23}Sidowski, \textit{loc. cit.}  \textsuperscript{24}Taffel, \textit{loc. cit.}  \textsuperscript{25}Nuthman, \textit{loc. cit.}
V. PERSONALITY VARIABLES RELATED TO CONDITIONABILITY

Several studies dealt with the relation of individual differences in personality to level of conditioning or degree of learning.

Taffel\textsuperscript{26} related anxiety to conditionability and found that patients with high and medium scores on the Taylor Manifest Anxiety Scale increased the frequency of use of the conditioned verbal behavior, while patients with low anxiety scores did not. He explained these results by assuming that anxious patients had greater need for structuring cues in the situation, and were therefore more alert to the reinforcement which resulted in higher levels of conditioning.

Sarason\textsuperscript{27} related high level of anxiety to high level of conditioning and high degree of defensiveness to poor verbal conditioning. He found that patients rated by their therapists as highly compliant, achieved higher levels of conditioning than patients who were rated as non compliant.

The study of specific personality variables, like those mentioned above, is important for a more differentiated understanding of the variables that operate in verbal conditioning.

\textsuperscript{26}Taffel, \textit{loc. cit.} \hspace{1em} \textsuperscript{27}I. G. Sarason, \textit{loc. cit.}
VI. AWARENESS OF THE CONDITIONING PROCESS

The question of the existence of learning without awareness has been a controversial issue in psychology for many years. Adams\textsuperscript{28}, in a review of the literature on this subject, stated that, in spite of the abundant research in this field, there was no conclusive evidence as to the existence of such learning.

One of the difficulties in reconciling the results of different studies concerning awareness is the fact that the same term is used differently by various researchers. Definitions of awareness include the correct formulation of the purpose of the experiment, as well as a vague hypothesis about the reinforcement contingency. The term is also applied in experimental situations that have little in common. It is used in experiments on subliminal perception, where it means the recognition of the subliminal stimulus, as well as in experiments where it means the intellectual recognition of a specific learning principle. It seems wise, therefore, to study awareness in situations that have a higher degree of specificity. The studies which will be reviewed here are similar in that the term awareness was used, in most cases,

to denote the verbalization of the relationship between a particular reinforcer with interpersonal connotations and a specific verbal behavior.

In most studies an open ended questionnaire was used to ascertain awareness. The presence of awareness was considered in some of the studies as an invalidating factor, and the results of the few aware subjects were therefore eliminated from the final analysis of the data.

Sidowski\textsuperscript{29} attempted to relate awareness to conditionability and instructed some of his subjects to detect and formulate the specific task which the experiment presented. He found no difference in conditionability between those who were aware of the task and those who were unaware of it.

Nuthman\textsuperscript{30}, who compared a rather small number of aware subjects with subjects who were unaware, did not find any difference in conditionability between them. In most of the other studies only a very small number of subjects became aware of the reinforcement contingency and no attempts were made to relate the presence or absence of awareness to any other variables.

A clearer understanding of the problem was achieved when awareness ceased to be evaluated by an all or none

\textsuperscript{29}Sidowski, \textit{loc. cit.} \hspace{1cm} \textsuperscript{30}Nuthman, \textit{loc. cit.}
criterion. Mandler and Kaplan\textsuperscript{31} evaluated awareness on a continuum and found that there were different degrees of awareness. They used an extensive open ended questionnaire to ascertain the degree of awareness of the contingency of the reinforcement on the production of plural nouns. The responses to these questions were scored on an eleven point scale with one representing full awareness and eleven representing complete lack of awareness. The results indicated that the average subject had some secondary hypothesis as to the existence of some unknown relationship between his responses and the experimenter's behavior, but none of the subjects was aware of the specific reinforcement contingency.

There are still many unanswered questions about the meaning and the nature of awareness and the variables relevant to its presence or absence. It would be important to know whether awareness is related to individual differences, or perhaps to the motivational aspects associated with the conditioned verbal behavior itself.

VII. SUMMARY

The general empirical evidence indicates that verbal behavior can be modified by selective reinforcement. The majority of studies of verbal conditioning dealt with

\textsuperscript{31}Mandler & Kaplan, \textit{loc. cit.}
verbal behavior that had either neutral or positive cultural connotations. There has been no exploration of the generality of the verbal behavior that can be modified by reinforcement.

Different reinforcers were found to be effective in changing verbal behavior, but there were indications that their effectiveness was determined both by the personality of the reinforcing agent and by the nature of the verbal behavior that was reinforced.

Relationships between conditionability and individual differences have been demonstrated but further exploration of this problem is necessary.

Awareness of the reinforcement contingency was of interest only in so far as its presence or absence was ascertained. Finer measurements of degree of awareness were developed. Many problems, such as the possible relation of awareness to individual differences, or to the nature of the reinforced behavior, have not been explored.

VIII. REPORT ON PILOT STUDY

In a pilot study, in which hostile verb responses were reinforced, it was found that 39 per cent of the subjects became aware of the reinforcement contingency. It was interesting to compare this result with Krasner's\textsuperscript{32} report

\textsuperscript{32}L. Krasner. Studies of the conditioning of verbal
of only 4 per cent of aware subjects in the twenty four studies of verbal conditioning which he reviewed. The comparison gave rise to the question of a possible relationship between awareness and the connotation of the conditioned verbal responses, which in the case of the pilot study was strongly negative.

The high percentage of aware subjects allowed a rough comparison of the aware and unaware subjects with regard to level of conditioning. The result was in agreement with the results of Sidowski\textsuperscript{33} and Nuthman\textsuperscript{34} in so far as the presence or absence of awareness did not seem to be related to level of conditioning. An inspection of the scores of the subjects on the California Psychological Inventory test gave indication of possible personality differences between the aware and unaware subjects.

The results of the pilot study indicated the importance of further study of verbal behavior with negative cultural connotations as well as more intensive exploration of "awareness" and its possible relationship to personality variables.

\textsuperscript{33}Sidowski, \textit{loc. cit.}

\textsuperscript{34}Nuthman, \textit{loc. cit.}
CHAPTER III

FORMULATION OF PROBLEMS AND HYPOTHESES

I. FORMULATION OF PROBLEMS

Verbal behavior is modified not only by positive reinforcement but also by punishment. Every community has its own specific code of verbal behavior and condemns and punishes behavior that deviates in terms of content, form, and timing, from this code. According to Skinner\(^1\), punishment does not extinguish behavior, but converts the punished behavior, or the circumstances under which it characteristically occurs, into conditioned aversive stimuli. Any behavior which reduces such stimulation, such as the avoidance of the punished behavior, is automatically reinforced. In this study the effect of positive reinforcement on verbal behavior, which has previously undergone aversive conditioning, will be explored. This is particularly relevant to the psychotherapy situation in which the therapist tries to induce the patient to verbalize material that has previously been punished and which the patient therefore avoids.

The interpersonal situation, in which verbal behavior is learned, has in itself different reinforcement value for

different people, related to their personal history. For some people, the participation in social interaction and the keen perception and control of its processes, is associated with rewarding and pleasant experiences. For others, interpersonal situations represent conditioned aversive stimuli and the participation in social interaction therefore arouses anxiety in them. This anxiety becomes a pervasive personality characteristic, since human living is, to a large extent, social living.

One might expect that, when previously avoided verbal behavior subsequently receives positive reinforcement in an interpersonal setting, a conflict will result to which people will react differentially. Those for whom aspects of the social situation represent aversive conditioned stimuli and who have a high level of anxiety, may tend to avoid or partially withdraw from the situation, which would result in decreased social perception or awareness of the reinforcement contingency. Those for whom interpersonal situations are associated with rewarding and pleasant experiences and who are relatively non anxious, may tend to get more involved in the social interaction, which would result in increased social perception or awareness of the reinforcement. One might expect therefore that awareness will be related to individual differences in level of anxiety and in attitudes toward interpersonal situations.
The studies by Sidowski\textsuperscript{2} and Nuthman\textsuperscript{3}, as well as the pilot study mentioned in the previous chapter, indicated that awareness of the reinforcement contingency was not related to level of conditioning or degree of learning. One might expect that when the learning task does not necessitate the discovery and use of a specific learning principle, those who are aware of the contingency of the reinforcement on a specific response will not achieve a higher degree of learning than those who are completely unaware of it.

It was hypothesized earlier that awareness would be related to level of anxiety. Sarason\textsuperscript{4} and Taffel\textsuperscript{5} found that high level of anxiety was related to high level of conditioning. Their theoretical explanation was that highly anxious individuals seek more actively for cues in the environment than non anxious individuals, and that they are therefore more alert to reinforcement, which results in the achievement of higher levels of conditioning. In both


studies, the experimental subjects were psychiatric patients whose scores, on personality scales measuring anxiety, tend to cluster around the high anxiety end of the scale. The reverse is true for normal non psychiatric subjects, whose scores cluster around the low anxiety end of the scale. It is quite possible that extremely high scores of psychiatric patients on an anxiety scale are different not only quantitatively, but also qualitatively, from medium or low scores of normal individuals. The relation between high anxiety level and high degree of learning, demonstrated by Sarason\(^6\) and Taffel\(^7\), in a patient population is not necessarily the same in a normal population. It does not follow therefore that in a normal non psychiatric population, awareness will be related to degree of learning, although it will be related to level of anxiety.

Farber\(^8\), who considered anxiety as a drive state, hypothesized that in complex learning situations, the higher the total drive state the greater the total number of competing response tendencies that are above threshold. Davids and Eriksen\(^9\) demonstrated the relationship between

\(^{6}\)I. G. Sarason, \textit{loc. cit.} \(^{7}\)Taffel, \textit{loc. cit.}


level of anxiety and the number of competing responses on a complex verbal task. Their study showed that level of anxiety, as measured by scores on the Taylor Manifest Anxiety Scale, was directly related to the number of responses on a word association test. Normal non psychiatric subjects with a high level of anxiety gave more responses than subjects with a low level of anxiety. A greater number of competing responses would necessarily prolong the total response time, since the choice of only one or a limited number of responses would be difficult. The relationship between anxiety and response time on a complex task was studied by Grice, who found that normal non psychiatric subjects, with a low level of anxiety, were superior in performance on a reaction time task, to those who had a high level of anxiety.

Since response time on a complex task is thus inversely related to level of anxiety, and since anxiety was assumed to be related to awareness, one might expect that awareness would also be related to response time. High degree of awareness will be related to short response times, and low degree of awareness will be related to long response times.

II. HYPOTHESES

The preceding theoretical formulations led to the following hypotheses. The first hypothesis deals with the effect of positive reinforcement on verbal behavior with negative cultural connotations, as representing behavior that has been adversely conditioned in the past:

1. The frequency of verbal behavior that has negative cultural connotations increases when the behavior receives positive reinforcement.

Assuming confirmation of the above hypothesis, it was hypothesized that degree of awareness of the reinforcement contingency would be related to certain personality and performance variables. The following four hypotheses were formulated:

2. The degree of awareness of the reinforcement contingency is inversely related to level of anxiety.

3. The degree of awareness of the reinforcement contingency is directly related to measures of interpersonal skill.

4. The increase in frequency of verbal behavior that has negative cultural connotations is not related to awareness of the reinforcement contingency.

5. The degree of awareness of the reinforcement contingency is inversely related to length of response time.
CHAPTER IV

METHOD AND PROCEDURES

I. INTRODUCTION

As was stated in the previous chapter, this research deals with two main problems: the positive reinforcement of verbal behavior with negative cultural connotations, and the relation of awareness of the reinforcement contingency to personality and performance variables. The first hypothesis in Chapter III is related to the first problem and the remaining hypotheses are related to the latter. Two different procedures were used to test these hypotheses.

To test the first hypothesis, it was decided to reinforce verbal responses with an aggressive connotation, as representing verbal behavior with negative cultural connotations. An experimental and a control group were given a word association test consisting of fifty aggressive and fifty neutral words, and were asked to give three response words to each stimulus word. From the twenty-first stimulus word on, the experimental group was reinforced with the verbal stimulus "Hm Mm" whenever they gave an aggressive response to any of the stimulus words. The control group did not receive this reinforcement. All the responses were
recorded and timed. The experimental and control groups were then compared with regard to increase of frequency of aggressive responses.

To test the remaining four hypotheses, the experimental group was interviewed to ascertain the presence or absence of awareness of the reinforcement contingency. On the basis of this interview the experimental group was then divided into two subgroups: the "aware" group consisting of the subjects who expressed awareness of the reinforcement contingency, and the "unaware" group consisting of those who were unable to verbalize the contingency of the reinforcement on verbal responses connoting aggression. The experimental group was also given a personality questionnaire consisting of 209 true or false questions. Fifty of these questions were taken from the Taylor Manifest Anxiety Scale (TMAS), and the remaining items represented five scales of the California Psychological Inventory (CPI), which measures interpersonal skills. The aware and unaware groups were compared with regard to scores on this test measuring level of anxiety and interpersonal skills. The two groups were also compared with regard to level of conditioning, as measured by the increase in frequency of aggressive responses on the word association test, and with regard to response time, which consisted of the time the subjects required to give three words in response to each stimulus word.

In the remainder of this chapter, more detailed
operational definitions of the variables specified in the hypotheses will be given, and the experimental procedures will be discussed more explicitly.

II. THE REINFORCEMENT OF VERBAL BEHAVIOR WITH NEGATIVE CULTURAL CONNOTATIONS

The Conditioned Verbal Response

The first hypothesis involves the interaction of two variables: verbal behavior with negative cultural connotations as a dependent variable, and reinforcement as an independent variable.

The verbal expression of aggression, in a non provocative interpersonal situation, is usually considered as unacceptable behavior in Western culture. It was therefore decided to use hostile verbal responses as a dependent variable. A preliminary experiment had shown that people refrained from giving hostile responses when the experimental situation was unstructured. It therefore seemed necessary to structure the experimental situation in a way that would assure the emission of at least some hostile responses, so that reinforcement could be given. For this purpose, a word association test was constructed which consisted of fifty aggressive and fifty neutral words. The subjects were asked to give three words in response to each stimulus word. It was felt that the inclusion of fifty aggressive words in the word association test would increase the likelihood of at
least some aggressive responses on the part of the subjects. The dependent variable was operationally defined as the increase in frequency of aggressive responses given to the word association test.

The Word Association Test

The word association test is a list of one hundred words, consisting of fifty aggressive and fifty neutral words, and is presented in Appendix A. The words were taken from Thorndike and Lorge. Since frequency of occurrence of words and their grammatical form are related to the type of responses that they evoke, the aggressive and neutral words were equated with regard to these variables. The frequency of occurrence and grammatical form of the words are also presented in Appendix A. The hundred words were divided into ten groups of ten words each, thus constituting ten trials. Each group contained five aggressive and five neutral words arranged at random order. The sequence of the ten groups of words was also randomized for each subject separately, in order to eliminate the bias of any one group in eliciting more neutral or aggressive words than another group.

The fifty aggressive words in the word association test were chosen according to the following three criteria:

---

1. Words denoting aggressive actions such as kill, mutilate, destroy.

2. Words denoting aggressive feelings like despise, hate, angry.

3. Words denoting objects or situations that are usually associated with acts of aggression such as gun, bomb, war.

These three criteria plus the following two were used also to classify the responses of the subjects as aggressive or non-aggressive words.

4. Words denoting direct results of aggression such as ruins.

5. Personal pronouns of people or literary figures that are usually associated with aggression such as Hitler or Frankenstein.

If the responses of the subjects fell into any of these five categories, they were reinforced immediately after they were given.

The word association test was given to three judges, all of them graduate students in psychology. They were asked to mark all the words which in their opinion had aggressive connotations. Tetrachoric correlation coefficients were computed to estimate the degree of agreement between the author's classification of the words as aggressive or neutral, on basis of which the test was constructed, and the classification of each of the judges. The classification of one of the judges agreed 100 per cent with that of the author. The correlation of each of the other two judges' classification with that of the author was .99. These
correlations indicate a very high degree of agreement as to the neutral and aggressive connotation of the words in the word association test.

The dependent variable was, by definition, the increase in number of aggressive responses, from trial to trial. The aggressive responses of the subjects to each of the ten groups of stimulus words was summed. Each subject had in that way ten scores. These ten scores were found to be preferable to one overall score because they demonstrated better the process of change or learning.

The Reinforcing Stimulus

Dollard and Miller\(^2\) called "attention" a strong reward which is capable of modifying behavior. The selective attention of the listener will induce the speaker to enlarge on topics that gain attention and to neglect others that fail to do so.

In this study, attention was used as reinforcement and was operationally defined as the verbal stimulus "Hm Mm". It was difficult to determine a priori what meaning the "Hm Mm" had for the subjects, but other studies, mentioned in Chapter III, reportedly found that the stimulus "Hm Mm" had been effective as a reinforcer.

The reinforced trials started from the third group of stimulus words on. Aggressive responses to the first twenty stimulus words were not reinforced. Reinforcement was given to subjects of the experimental group whenever they gave an aggressive response to either the neutral or aggressive stimulus words. Each aggressive response was reinforced separately so that when three aggressive responses were given to one stimulus word, three reinforcements were given. The number of reinforcements that each subject received equals therefore the number of aggressive responses that were given from the third trial on.

II. THE RELATION OF AWARENESS TO PERSONALITY AND PERFORMANCE VARIABLES

The last four hypotheses deal with the relationship of the degree of awareness of the reinforcement contingency to certain personality and performance variables.

Awareness

Awareness was operationally defined as the verbalization of the contingency of the reinforcement on verbal responses connoting aggression. An open ended questionnaire was devised to be used as an aid in an interview, the purpose of which was to ascertain the degree of awareness of each subject. The questionnaire is presented in Appendix B.

Questions 1, 2, 3, and 8, concerned the subjects' feelings during and about the experiment. These questions
attempted to explore some aspects of the mental processes during the test, such as how and whether decisions about giving or withholding responses were made. Questions 4, 5, 6, and 7, focused on the subjects' awareness of their responses and of the reinforcement contingency.

The sixth question pertains directly to the awareness of the reinforcement contingency and is stated as follows: "Did you notice anything that I did or said during the experiment? If the answer is yes, when did I do this and why?" On the basis of this question the experimental group was divided into the aware and unaware groups. All the subjects who could specify that the experimenter said "Hm Mm", and who gave three or more correct examples of aggressive words that had been followed by the "Hm Mm", were called aware. Thus if a subject said: "You said Hm Mm when I said violent words like hate, kill, murder, and destruction", he was called aware. All the subjects who were either completely unaware of the reinforcement, or were aware of the reinforcement but could not give correct examples of the class of responses being conditioned, were called unaware.

Anxiety

Anxiety was operationally defined as scores on the Taylor Manifest Anxiety Scale (TMAS). The fifty items of the TMAS which differentiate between subjects manifesting a preponderance of behavior symptomatic of anxiety, and
those who show relatively little of such behavior, were included in their original random order together with 159 items of the California Psychological Inventory.

**Interpersonal Skill**

Interpersonal skill was operationally defined as scores on five scales of the California Psychological Inventory (CPI). The scales that were used were:

1. Dominance,
2. Capacity for Status,
3. Sociability,
4. Social Presence,
5. Self Acceptance. These scales were intended to provide a measure of different aspects of social skill. The following are definitions of the five scales as quoted from the CPI Manual.

- **Do (Dominance)** - To assess factors of leadership ability, dominance, persistence, social initiative.
- **Cs (Capacity for Status)** - Attempts to measure the personal qualities and attributes which underlie and lead to status.
- **Sy (Sociability)** - To identify persons of outgoing sociable participative temperament.
- **Sp (Social Presence)** - To assess factors such as poise, spontaneity and self confidence in personal and social interaction.
- **Sa (Self Acceptance)** - To assess factors such as feelings of personal worth, self acceptance and capacity for independent thinking and action.

---

The items of these scales were arranged randomly, together with the items of the TMAS, in a questionnaire consisting of 209 questions with instructions. A separate "true-false" answer sheet was provided for each subject. The questionnaire is presented in Appendix C.

Response Time

Response time was measured with a stop watch and consisted of the total time that elapsed from the moment the stimulus word was said to the time when the third response was given. Each subject obtained one overall score representing the total response time to the hundred stimulus words.

III. CHOICE OF SUBJECTS

As it is well known that sex, age, level of education, and intelligence, are related to verbal behavior as well as to personality variables, it was decided to select subjects who would constitute a homogenous group with regard to these variables.

The subjects were fifty nine female undergraduates of the University of California. The age range was from seventeen to twenty five years. Most of the subjects were in their first or second year of College. The range of intelligence was narrowed, since all of the subjects had to fulfil the admission requirements of the University. The
participation in the experiment was a course requirement. The mean age for the experimental group was 18 and for the control group 19.

IV. EXPERIMENTAL PROCEDURES

The subjects were assigned randomly to an experimental group consisting of thirty nine subjects, and a control group consisting of twenty subjects.

All the subjects received the following instructions: "I am going to read you a list of words and I want you to say the first three words that come to your mind to each word that I say. You can take as much time as you wish. I am going to time your responses, but this does not mean that speed is important in this situation."

All the responses of the subjects were recorded and timed. The reinforcement consisted of the verbal stimulus "Hm Mm" said by the experimenter. In order to establish a baseline of responses for each subject, the experimental group received reinforcement only from the third group of stimulus words on. Every time a subject in the experimental group gave an aggressive response, the experimenter said "Hm Mm". An effort was made to refrain from any other communication such as smiling or looking at the subject. The control group received no reinforcement.

The experimental group was interviewed directly after
the experiment. The eight questions of the Awareness Questionnaire were used as leading questions in the interview. After the interview, the experimental group received the combined CPI and TMAS questionnaire, which they answered by checking the "true-false" answer sheet. The control group was not interviewed and did not answer the questionnaire.
CHAPTER V

ANALYSIS OF RESULTS

I. INTRODUCTION

The results of this study are related to the two main problems that were dealt with in this research: the conditioning of verbal behavior with negative cultural connotations, and the relation of awareness of the reinforcement contingency to personality and performance variables.

With regard to the first problem the experimental findings indicated that the frequency of occurrence of verbal behavior with negative cultural connotations increased when the behavior was reinforced.

With regard to awareness, the results showed that degree of awareness was related to level of anxiety and to measures of interpersonal skill. High degree of awareness was associated with low level of anxiety and vice versa. A high degree of awareness was also associated with a high degree of social presence and self acceptance, and low degree of awareness with low scores on these two traits. The findings also showed that degree of awareness was not related to level of conditioning, but was related to overall response level. People who had a high degree of awareness gave more aggressive responses than people with a low degree of awareness.
The hypothesized relationship between degree of awareness and length of response time was not supported by the experimental results.

In the remainder of this chapter the results will be discussed in more detail in terms of the statistical analysis of the data and the inferences that were made.

II. LEARNING

The hypothesis concerning the conditioning of verbal behavior with negative cultural connotations was stated as follows:

Hypothesis 1: The frequency of verbal behavior that has negative cultural connotations increases when the behavior receives positive reinforcement.

The statistical hypothesis tested was:

Hypothesis 1': There is no difference between the mean of aggressive responses from trial to trial of a group whose responses are reinforced and that of a group whose responses are not reinforced.

This hypothesis was tested against the class of alternatives that are stated in the following hypothesis.

Hypothesis 1'': The mean of aggressive responses of a group whose responses are reinforced increases from trial to trial, and that of a group whose responses are not reinforced does not increase.

To test this hypothesis, the results of the experimental group, consisting of thirty nine subjects, were tested against the results of the control group, consisting of twenty subjects.
The mean of aggressive responses of the two groups on ten trials is presented in Table I and Figure 1. It is evident that the two groups differ with respect to increase in aggressive responses from trial to trial. The experimental group shows marked increase in aggressive responses beginning with the third trial, which was the first reinforced trial. In the control group there are fluctuations in the frequency of aggressive responses which show no consistent tendency. On none of the trials, from the third to the tenth, is the frequency of responses of the control group higher than on the first two trials which form the baseline.

A test for homogeneity of variance of the subjects in the same group, around the mean of that group, was performed for the two groups, and estimated with Fisher's F ratio. The value of F is 1.48 which, with 38 and 19 degrees of freedom, is not significant at the .05 level. This indicates that the two groups were drawn from a population with a common variance.

A test for homogeneity of variance of the subjects in each group over ten trials, around the mean of the subjects in the group over ten trials, was also performed. The value of Fisher's F ratio is 1.41 which, with 198 and 135 degrees of freedom is not significant at the .05 level. This indicates that the two groups were drawn from
## TABLE I

**Mean of Aggressive Responses per Trial of the Control and Experimental Groups**

<table>
<thead>
<tr>
<th>TRIALS</th>
<th>EXPERIMENTAL GROUP</th>
<th>CONTROL GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6.56</td>
<td>8.05</td>
</tr>
<tr>
<td>2</td>
<td>7.46</td>
<td>8.80</td>
</tr>
<tr>
<td>3</td>
<td>10.69</td>
<td>8.00</td>
</tr>
<tr>
<td>4</td>
<td>11.76</td>
<td>7.10</td>
</tr>
<tr>
<td>5</td>
<td>12.00</td>
<td>8.55</td>
</tr>
<tr>
<td>6</td>
<td>12.20</td>
<td>6.75</td>
</tr>
<tr>
<td>7</td>
<td>12.33</td>
<td>7.45</td>
</tr>
<tr>
<td>8</td>
<td>12.34</td>
<td>7.90</td>
</tr>
<tr>
<td>9</td>
<td>12.58</td>
<td>8.10</td>
</tr>
<tr>
<td>10</td>
<td>12.41</td>
<td>7.35</td>
</tr>
</tbody>
</table>
FIGURE 1
MEAN OF AGGRESSIVE RESPONSES PER TRIAL
OF THE CONTROL AND EXPERIMENTAL GROUPS
The frequency distribution of aggressive responses seemed to be normal, and an analysis of variance could therefore be performed. In the analysis of variance the data were dealt with in terms of the interaction between groups and trials, the difference between trials, and the difference between the two groups. This analysis is presented in Table II.

The analysis of variance showed that the mean sum of squares between the two groups tested with the variation between subjects in the same group, gave an F ratio of 42.679. This value, with 1 and 57 degrees of freedom, is significant at the .01 level.

The interaction sum of squares between the trials and groups was tested with the pooled interaction term for subjects and trials, which gave an F ratio of 22.415. This value, with 9 and 513 degrees of freedom is significant at the .01 level.

These two results, and the direction of the observed difference, allow us to reject Hypothesis 1' in favour of the alternative which supports the inference of Hypothesis 1, which states that the frequency of verbal behavior with negative cultural connotations increases when the behavior receives positive reinforcement.

The significance of the mean sum of squares
**TABLE II**

**ANALYSIS OF VARIANCE FOR THE NUMBER OF AGGRESSIVE RESPONSES OF THE CONTROL AND EXPERIMENTAL GROUPS ON TEN TRIALS**

<table>
<thead>
<tr>
<th>SOURCE OF VARIATION</th>
<th>SUM OF SQUARES</th>
<th>df</th>
<th>MEAN SQUARE</th>
<th>F</th>
<th>LEVEL OF SIGNIFICANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>1426.414</td>
<td>1</td>
<td>1426.414</td>
<td>42.679</td>
<td>.01</td>
</tr>
<tr>
<td>Between subjects in same group</td>
<td>1905.054</td>
<td>57</td>
<td>33.422</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total between subjects</td>
<td>3331.468</td>
<td>58</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between trials</td>
<td>1022.380</td>
<td>9</td>
<td>113.598</td>
<td>28.350</td>
<td>.01</td>
</tr>
<tr>
<td>Interaction: trials x groups</td>
<td>808.355</td>
<td>9</td>
<td>89.817</td>
<td>22.415</td>
<td>.01</td>
</tr>
<tr>
<td>Interaction: pooled subjects x trials</td>
<td>2055.465</td>
<td>513</td>
<td>4.007</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total within subjects</td>
<td>3886.200</td>
<td>531</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>7217.668</td>
<td>589</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
between the ten trials was tested with the mean sum of squares based on the pooled interaction sum of squares for subjects and trials. The F ratio is 28.350 which, with 9 and 513 degrees of freedom is significant at the .01 level. The significant overall difference between the trials is due to the large difference between trials in the experimental group which overshadows the lack of difference between trials in the control group.

III. AWARENESS

To test the hypotheses dealing with awareness, only the data from the experimental group were used. Answers to the sixth question of the Awareness Questionnaire were used as a basis for dividing the group into two, the aware group consisting of sixteen subjects and the unaware group consisting of twenty three subjects.

The hypotheses dealing with the relation of awareness to anxiety was stated as follows:

**Hypothesis 2**: The degree of awareness of the reinforcement contingency is inversely related to level of anxiety.

The statistical hypothesis tested was:

**Hypothesis 2'**: There is no difference in the level of anxiety as measured by scores on the TMAS between aware and unaware groups.

This hypothesis was tested against the class of alternatives that are stated in the following hypothesis.
Hypothesis 2': Unaware groups have higher levels of anxiety than aware groups.

The data used for testing this hypothesis were the scores of the aware and unaware subjects on fifty items of the TMAS. The mean of the aware group was 10.94 and that of the unaware group was 18.00. The difference between these means is consistent with Hypothesis 2.

The $\chi^2$ test was used to estimate the significance of the difference between the two groups around the grand median. The value of $\chi^2$ is 4.14 which, with 1 degree of freedom, is significant at the .05 level. One can therefore reject Hypothesis 2 in favour of the alternative which supports the inference of Hypothesis 2 which states that the degree of awareness of the reinforcement contingency is inversely related to level of anxiety. The direction of the observed difference indicates that a high degree of awareness is associated with a low level of anxiety and vice versa.

The hypothesis dealing with the relation of awareness to measures of interpersonal skill was stated as follows:

Hypothesis 3: The degree of awareness of the reinforcement contingency is directly related to measures of interpersonal skill.

The operational hypothesis, which was tested statistically, deals with five aspects of interpersonal skill which were tested separately. The statement of the
operational hypothesis is as follows:

**Hypothesis 3':** Aware and unaware groups do not differ with respect to mean scores on the following five CPI scales: Social Presence (Sp), Self Acceptance (Sa), Capacity for Status (Cs), Sociability (Sy), and Dominance (Do).

This hypothesis was tested against the class of alternatives that are stated in the following hypothesis.

**Hypothesis 3'':** Aware groups have higher scores on the Sp, Sa, Cs, Sy, and Do scales than unaware groups.

The data used for testing this hypothesis were the standard scores of the aware and unaware subjects on the five CPI scales. Since the standard scores of the CPI are normally distributed, and the scores of the aware and unaware subjects fell within the norm for College students, it was felt that the scores of the experimental group could be treated as normally distributed data. This allowed the use of the students t test.

The means of the aware and unaware groups on the five CPI scales differ in the predicted direction. They are presented in Table III. The means of the aware group on all five scales are higher than the means of the unaware group.

Separate tests for homogeneity of variance were performed for the two groups on each of the five CPI scales and estimated with Fisher's F ratio. The F values are not significant at the .05 level for any of the five scales, hence the groups were drawn from a population with a
## TABLE III

MEAN STANDARD SCORES ON FIVE CPI SCALES OF THE AWARE AND UNAWARE GROUPS

<table>
<thead>
<tr>
<th>CPI SCALES</th>
<th>AWARE GROUP</th>
<th>UNAWARE GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dominance</td>
<td>55.44</td>
<td>51.83</td>
</tr>
<tr>
<td>Sociability</td>
<td>54.81</td>
<td>51.00</td>
</tr>
<tr>
<td>Capacity for Status</td>
<td>59.25</td>
<td>53.70</td>
</tr>
<tr>
<td>Social Presence</td>
<td>57.06</td>
<td>50.13</td>
</tr>
<tr>
<td>Self Acceptance</td>
<td>60.88</td>
<td>52.17</td>
</tr>
</tbody>
</table>
common variance with regard to scores on these scales. The significance of the differences between the means of the aware and unaware groups on the five CPI scales, were estimated with five separate $t$ tests. The values of $t$ are presented in Table IV.

The obtained values of $t$ are significant at the .05 level for the Sp and Sa scales and are in the predicted direction, although not statistically significant, for the Cs, Sy, and Do scales. These results, which are consistently in the predicted direction, allow the rejection of Hypothesis 3' in favour of the alternative which supports the inference of Hypothesis 3, which states that the degree of awareness of the reinforcement contingency is directly related to measures of interpersonal skill.

The hypothesis dealing with the relation of awareness to level of conditioning is stated as follows:

Hypothesis 4: The increase in frequency of verbal behavior that has negative cultural connotations is not related to awareness of the reinforcement contingency.

The statistical hypothesis tested was:

Hypothesis 4': There is no difference in the increase of the mean of aggressive responses from trial to trial between aware and unaware groups.

This hypothesis was tested against the class of alternatives that are stated in the following hypothesis:

Hypothesis 4'': Aware and unaware groups differ in the increase of the mean of aggressive responses from trial to trial.
## TABLE IV

VALUES OF \( t \) FOR THE AWARE AND UNAWARE GROUPS ON FIVE CPI SCALES

<table>
<thead>
<tr>
<th>CPI SCALES</th>
<th>( t )</th>
<th>DEGREES OF FREEDOM</th>
<th>LEVEL OF SIGNIFICANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dominance</td>
<td>1.08</td>
<td>37</td>
<td>.14</td>
</tr>
<tr>
<td>Sociability</td>
<td>1.13</td>
<td>37</td>
<td>.13</td>
</tr>
<tr>
<td>Capacity for Status</td>
<td>1.61</td>
<td>37</td>
<td>.06</td>
</tr>
<tr>
<td>Social Presence</td>
<td>2.03</td>
<td>37</td>
<td>.05</td>
</tr>
<tr>
<td>Self Acceptance</td>
<td>2.81</td>
<td>37</td>
<td>.05</td>
</tr>
</tbody>
</table>
To test this hypothesis, the aggressive responses of the experimental group were used. Each subject had ten scores representing the number of aggressive responses on each of the ten trials.

The means of aggressive responses of the aware and unaware groups are presented in Table V and Figure 2. It is evident that there is an increase in aggressive responses in both groups, throughout the ten trials. The groups do not seem to differ in the degree of increase. One can see that the two learning curves are almost parallel to each other. There is, however, an overall difference in response level between the two groups. The aware group gave more aggressive responses than the unaware group on all the trials.

A test for homogeneity of variance of the subjects in the same group around the mean of the group was performed and estimated with Fisher's $F$ ratio. The value of $F$ is 1.53 which, with 22 and 15 degrees of freedom, is not significant at the .05 level. This indicates that the two groups were drawn from a population with a common variance.

A test for homogeneity of variance of the subjects in the group over ten trials around the mean of the subjects in the group over ten trials was also performed. Fisher's $F$ ratio on this test is 1.25 which, with 342 and 171 degrees of freedom is not significant at the .05 level.
TABLE V
MEAN OF AGGRESSIVE RESPONSES PER TRIAL
OF THE AWARE AND UNAWARE GROUPS

<table>
<thead>
<tr>
<th>TRIALS</th>
<th>AWARE GROUP</th>
<th>UNAWARE GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7.50</td>
<td>5.91</td>
</tr>
<tr>
<td>2</td>
<td>8.37</td>
<td>6.83</td>
</tr>
<tr>
<td>3</td>
<td>11.00</td>
<td>10.48</td>
</tr>
<tr>
<td>4</td>
<td>12.50</td>
<td>11.26</td>
</tr>
<tr>
<td>5</td>
<td>12.44</td>
<td>11.70</td>
</tr>
<tr>
<td>6</td>
<td>12.69</td>
<td>11.87</td>
</tr>
<tr>
<td>7</td>
<td>13.25</td>
<td>11.70</td>
</tr>
<tr>
<td>8</td>
<td>13.81</td>
<td>12.22</td>
</tr>
<tr>
<td>9</td>
<td>13.31</td>
<td>12.09</td>
</tr>
<tr>
<td>10</td>
<td>12.75</td>
<td>12.17</td>
</tr>
</tbody>
</table>
Trials

FIGURE 2

MEAN OF AGGRESSIVE RESPONSES PER TRIAL
OF THE AWARE AND UNAWARE GROUPS
This indicates that the two groups come from a populations with common variance.

An analysis of variance was performed in which the data were dealt with in terms of the interaction between the groups and the trials, the difference between the groups, and the difference between the trials. The analysis is presented in Table VI. The analysis of variance showed that the interaction between trials and groups, which was tested with the pooled interaction sum of squares for subjects and trials, gave an F ratio of .532. This value, with 9 and 333 degrees of freedom, is not significant at the .05 level. The mean sum of squares between the trials was tested with the mean sum of squares for subjects and trials. The F ratio is 57.39 which, with 9 and 333 degrees of freedom, is significant at the .01 level. These findings show that there was a difference between trials but not between groups. These two results indicate that Hypothesis 4 cannot be rejected and thus support Hypothesis 4, which states that the increase in frequency of verbal behavior that has negative cultural connotations is not related to degree of awareness.

An additional result was that the mean sum of squares between the two groups, as tested with the sum of squares of the subjects in the same group, gave an F ratio of 4.68. This value, with 1 and 37 degrees of freedom, is
## TABLE VI

**ANALYSIS OF VARIANCE FOR THE NUMBER OF AGGRESSIVE RESPONSES OF THE AWARE AND UNAWARE GROUPS ON TEN TRIALS**

<table>
<thead>
<tr>
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significant at the .05 level and indicates that degree of awareness is related to the response level of verbal behavior with negative cultural connotations. The aware and unaware groups do not differ in degree of learning, but they differ in overall response level. The aware group gave more aggressive responses throughout the ten trials than the unaware group.

The hypothesis dealing with the relation of awareness to response time is stated as follows:

**Hypothesis 5**: The degree of awareness of the reinforcement contingency is inversely related to length of response time.

The statistical hypothesis tested was:

**Hypothesis 5'**: Aware and unaware groups do not differ with respect to length of response time.

This hypothesis was tested against the class of alternatives that are stated in the following hypothesis:

**Hypothesis 5''**: Aware groups have shorter response time scores than unaware groups.

To test this hypothesis the response time scores of the subjects of the experimental group were used. The \( \chi^2 \) test was used to estimate the significance of the difference between the scores of the aware and unaware groups around the grand median. The value of \( \chi^2 \) is .04 which, with 1 degree of freedom, is not significant at the .05 level. Hypothesis 5' could therefore not be rejected and the inference of Hypothesis 5, which states that degree of awareness is inversely related to length of response time, could
not be made, since the statistical analysis of the results did not support it.

**Degree of Awareness**

The awareness questionnaire was analyzed in terms of the degree of awareness of the reinforcement contingency and the awareness of thoughts and feelings during the experiment.

Question 6 was used to differentiate between the aware and unaware subjects. On the basis of this question 41 per cent of the subjects were classified as aware.

On the basis of question 4, 92 per cent of the subjects were found to have been aware that they had given the conditioned class of responses more often than any other kind of responses. This indicates that a certain degree of awareness, at least of their own responses, was present in almost all the cases.

None of the other questions differentiated between the aware and unaware groups. The most interesting finding in this respect is that the unaware subjects, who had higher levels of anxiety as measured by scores on the TMAS, did not admit more often to feelings of anxiety during the experiment than the aware subjects, who had lower scores on the test.
CHAPTER VI

DISCUSSION

Two main problems were investigated in this study: the effect of positive reinforcement on verbal behavior with negative cultural connotations, and the relationship of awareness of the reinforcement contingency to personality and performance variables.

Inferences from the results of the study are subject to the limitations imposed by the experimental design and the sample of subjects that was used.

One of the main findings of this study was that verbal behavior with negative cultural connotations can be modified by conditioning in terms of frequency of occurrence. The assumption about verbal behavior with negative cultural connotations was that, in the process of socialization, such behavior acquires aversive conditioned stimuli and therefore arouses avoidance responses. The experimental results showed that, when verbal behavior of this kind receives positive reinforcement, the frequency of its occurrence increases. This finding was of particular interest since most of the studies of verbal conditioning have dealt with the reinforcement of verbal behavior with positive or neutral connotations only. The question whether positive
reinforcement would also be effective when the conditioned verbal behavior has a strong aversive meaning, has not been explored before.

Although the conditioning was successful in this study, it is still an open question whether verbal behavior with negative cultural connotations can be conditioned under different circumstances. The cooperation in a scientific experiment and the compliance with an experimenter who has prestige and authority in the situation, have strong reinforcing values in our culture and might have contributed to any changes in the behavior that took place. It would be very important to study the conditioning of aversive verbal behavior in a situation where these variables are controlled.

One of the values in our culture is the maintenance of a certain degree of self consistency. An interesting problem, and one which this study did not investigate, is whether reinforcement could effect changes in a well systematized and consistent pattern of verbal behavior. One could select people with very definite and well formed attitudes or ideas about a certain subject and try to change these by reinforcement.

Another question that was not explored in this study is how permanent and long lasting the changes of verbal behavior effected by reinforcement are, and how much they
are linked to the experimental situation alone.

Should a more general applicability of the effect of reinforcement on verbal behavior be demonstrated, the findings of this study would lend support to one of the assumptions of learning theory about the process of psychotherapy. The verbal behavior that was conditioned in this study was the verbal expression of aggression, which is usually avoided in our culture in non provocative interpersonal situations. The frequency of aggressive verbal responses increased as a result of reinforcement. In the therapy situation an effort is made to help the patient verbalize material that has been aversively conditioned in the past, and which the patient therefore avoids. Learning theory assumes that the selective attention of the therapist reinforces the verbalization of the desired verbal material, and therefore increases the frequency of occurrence of verbalizations of the same kind.

The findings of this study with regard to "awareness" are of special interest, since in previous studies of verbal conditioning, awareness was dealt with only in so far as its presence or absence were ascertained. Only two studies have dealt with the relation of awareness to level of conditioning. The psychological meaning of awareness and its possible relationship to personality characteristics, has not been explored in any of the previous studies.
Awareness in this study was defined as the verbalization of the contingency of the reinforcement on verbal responses connoting aggression. The experimental results showed that degree of awareness was inversely related to level of anxiety. The results showed further, that degree of awareness was positively related to degree of social presence and self acceptance. In comparing those who were aware to those who were unaware with regard to level of anxiety, social presence, and self acceptance, one could describe those who were unaware as individuals who were relatively anxious, insecure, doubtful of their own worth, uneasy in social situations, rather passive, and lacking in social presence. Those who were aware of the reinforcement contingency could be described as individuals who were relatively non anxious, self assured, eager to participate in social interactions, active, and possessing a high degree of social presence.

The relationship of awareness to the above mentioned personality characteristics might be explained as follows. For some people the participation in social interaction is associated with rewarding and pleasant experiences. For others, interpersonal situations represent conditioned aversive stimuli and the participation in social interaction therefore arouses anxiety in them. This anxiety becomes a pervasive personality characteristic since human living is,
to a large extent, social living. When previously avoided verbal behavior subsequently receives positive reinforcem- ment in an interpersonal setting, a conflict results to which people react differentially. Those for whom aspects of the social situation represent aversive conditioned stimuli, might react by avoidance and partial withdrawal from the situation, which would result in decreased social perception or awareness of the reinforcement contingency. Those for whom interpersonal situations are associated with rewarding experiences, might tend to get more involved in the interpersonal situation, which would result in increased social perception or awareness of the reinforcement contingency. Degree of awareness is thus related to level of anxiety and to attitudes toward interpersonal situations. Awareness itself functions here as one aspect of social or interpersonal perception.

The experimental findings concerning the relation of awareness to personality variables, such as dominance, capacity for status, and sociability, were in the predicted direction but the statistical analysis did not demonstrate population differences.

It would be worth while to study the relationship between awareness and various personality variables by selecting subjects on the basis of personality characteristics and investigating whether these variables are related
to degree of awareness. This procedure would be a more direct approach to the problem reversing the procedure that was used in this study, in which the presence or absence of awareness was used as a criterion for assigning subjects to two separate groups, which were then compared with regard to personality variables.

The experimental results showed that degree of awareness was not related to level of conditioning. This result is in agreement with the results reported by Sidowski and Nuthman. It appears that on tasks that do not necessitate the discovery and use of a specific learning principle, those who were aware of the reinforcement contingency did not learn more or better than those who were unaware of it.

An interesting additional result of the study, which was not predicted, was that although the aware subjects did not differ from those who were unaware in degree of learning, they did differ in overall response level. Those who were aware gave a larger number of aggressive responses than those who were unaware. One explanation of this finding could be that the more anxious and insecure people were more fearful and reluctant to express hostility in the


presence of an authority figure than those who were relatively non anxious and who felt at ease in the situation. An interesting counterpart to this finding is the result of the study by Binder, McConnell and Sjoholm, who found that when mildly hostile responses were conditioned, a higher degree of conditioning was achieved when the reinforcing agent was a permissive female experimenter than when it was an authoritative male experimenter.

The hypothesis about the relation between response time and awareness was not supported by the experimental results. The original assumption was that since anxiety is inversely related to response time and since awareness is related to anxiety, awareness would also be related to response time. It seems, however, that there are many more variables which determine response time and that therefore the prediction was not supported by the results. Dunn, Bliss, and Siipola showed, in a recent study, that reaction time was related to impulsivity, introversion, and individual values. These and other variables that might be related to response time were not controlled in this study and might have contributed to the inconclusive results in this case.

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In the present study 41 per cent of the subjects became aware of the reinforcement contingency. This result is not consistent with that of other studies and needs further clarification. Krasner, in his review of studies of verbal conditioning, reported that only 4 per cent of the combined subjects in the twenty four studies that he had reviewed, became aware, by the definition of each experimenter.

It seems quite possible that the nature of the conditioned response itself contributed to the high per cent of awareness. One might say that the positive reinforcement, in this case, created a conflict, since verbalizations that were previously avoided were now encouraged, and that one of the results of this conflict was increased awareness. The awareness of the conditioned behavior itself was reported in 92 per cent of the cases. This is unusual in itself, since in most of the studies, people were unable to specify what their most frequent responses had been. This awareness was a somewhat unpleasant experience for most subjects. Characteristic responses to question 4 of the Awareness Questionnaire were:

I said a lot of words like war, hate, mutilate. I don't know why I said these words, they just seem to come to my mind. I am really against violence, I said too many of them.

---

I said many violent words like war, murder, destruction, because the words you said were like this. I don't like violence, there is too much of it in the world already.

Both of these examples demonstrate the conflictual aspect of the conditioning and the painful awareness of saying things that one feels strongly against.

This phenomenon of increased awareness in situations of conflict is relevant also to psychotherapy. Patients often talk about their personal experiences without necessarily becoming more aware of the feelings associated with them. What therapists call awareness or insight refers usually to a situation in which feelings, that had been avoided or repressed for a long time, are for the first time painfully acknowledged.

It could be that the degree of awareness is related to the acceptability of the learned response to the individual, and that awareness increases when the learned behavior has a strong aversive meaning.

One could study this problem by comparing the proportion of aware subjects in two groups. In one group an aversive verbal response could be reinforced and in the other group the reinforced response could have either neutral or positive cultural connotations.

The results of this study contribute to the understanding of verbal learning in the case in which the learned behavior has negative cultural connotations. The findings
also helped to clarify the concept of learning with or without awareness and its relationship to personality and performance variables.
CHAPTER VII

SUMMARY

This study dealt with two main problems: the effect of positive reinforcement on verbal behavior with negative cultural connotations, and the relation between awareness of the reinforcement contingency and certain personality and performance variables.

In previous studies of verbal conditioning the focus of interest was on changes in verbal behavior with neutral or positive cultural connotations. It was shown that the frequency of verbal behavior of this kind could be changed by selective reinforcement with various reinforcers. In most of these studies the changes that occurred were not accompanied by awareness of the process of conditioning, or the reinforcement contingency. When awareness was present it was considered as an invalidating factor and the results of those who became aware were eliminated from the final analysis of the data. The proportion of those who became aware was very small and approximated 4 per cent of the combined subjects in all these studies.

The study of verbal behavior that has negative cultural connotations and which is usually avoided, was of particular interest because of its relevancy to the therapy situation, in which the therapist tries to induce the patient
to talk about anxiety arousing material which he usually avoids. It was hypothesized that the positive reinforcement of verbal behavior with negative cultural connotations would increase the frequency of occurrence of this behavior.

Awareness of the reinforcement contingency was conceived of, in this study, as one aspect of social or interpersonal perception. It was assumed that the positive reinforcement of verbal behavior with negative cultural connotations, which had been aversively conditioned in the past, would create a state of conflict to which people would react differentially. People for whom interpersonal situations had been associated with pleasant and rewarding past experiences would tend to get more involved in the interpersonal situation and would therefore become more perceptive or aware of the interpersonal reinforcer and its contingency on the verbal behavior. People for whom interpersonal situations had been associated with unpleasant traumatic past experiences, which had caused pervasive anxiety, would tend to withdraw from the situation which would result in decreased perceptiveness or awareness of the reinforcement contingency. This led to the hypotheses that awareness would be related to personality differences in level of anxiety and in interpersonal skill. People who are aware of the reinforcement contingency would be less anxious and possess a higher level of interpersonal skill than people who are unaware of it.
Several studies indicated that awareness was not related to level of conditioning. On tasks which did not necessitate the discovery and use of a specific learning principle, those who were aware of the reinforcement contingency did not seem to learn better or more than those who were unaware of it. It was therefore hypothesized that degree of awareness would not be related to level of conditioning.

It had been shown, in several studies, that in the learning of complex behavior, level of anxiety was inversely related to length of response time. Since it was hypothesized earlier that awareness would be related to level of anxiety, and since anxiety is related to response time, it was hypothesized that awareness would also be related to response time. People who are aware of the reinforcement contingency would have shorter response times than people who are unaware of it.

These theoretical formulations led to the following five hypotheses. The first hypothesis deals with the effect of positive reinforcement on verbal behavior with negative cultural connotations, and the remaining hypotheses deal with the relation between awareness of the reinforcement contingency and certain personality and performance variables. The hypotheses are stated as follows:
Hypotheses

1. The frequency of verbal behavior that has negative cultural connotations increases when the behavior receives positive reinforcement.

2. The degree of awareness of the reinforcement contingency is inversely related to level of anxiety.

3. The degree of awareness of the reinforcement contingency is directly related to measures of interpersonal skill.

4. The increase in frequency of verbal behavior that has negative cultural connotations is not related to awareness of the reinforcement contingency.

5. The degree of awareness of the reinforcement contingency is inversely related to length of response time.

For the purpose of this study, verbal behavior with negative cultural connotations was operationally defined as verbal responses connoting aggression. Reinforcement was operationally defined as "attention", and the verbal stimulus "Hm Mm" was used to indicate it. Awareness was defined as the verbalization of the contingency of the reinforcement on verbal responses connoting aggression. Anxiety was defined as scores on the Taylor Manifest Anxiety Scale (TMAS). Measures of interpersonal skill were defined as scores on five scales of the California Psychological Inventory (CPI): Social Presence, Self Acceptance, Capacity for Status, Dominance, and Sociability.

Two different procedures were employed to test the hypotheses. To test the first hypothesis, an experimental
group consisting of thirty nine subjects and a control group consisting of twenty subjects were used. They were given a word association test which consisted of fifty aggressive and fifty neutral words arranged randomly in groups of ten words to constitute ten trials. The subjects were asked to say three words in response to each stimulus word that the experimenter said. From the third trial on, the experimental group was reinforced with the verbal stimulus "Hm Mm" whenever they gave an aggressive response to any of the stimulus words. The control group did not receive this reinforcement. All the responses were recorded and timed. The experimental and control groups were then compared with regard to increase of frequency of aggressive responses on ten trials. The results of an analysis of variance of these data supported Hypothesis 1, which states that the frequency of verbal behavior that has negative cultural connotations increases when the behavior receives positive reinforcement.

To test the remaining four hypotheses only the data from the experimental group were used. The experimental group was interviewed to ascertain the presence or absence of awareness of the reinforcement contingency. On basis of this interview the experimental group was divided into two subgroups, the "aware" group consisting of sixteen subjects who were aware of the reinforcement contingency, and the
"unaware" group consisting of twenty three subjects who were unaware of it. These two groups were given a personality questionnaire consisting of 209 "true-false" questions. Fifty of these questions were taken from the TMAS, and the remaining items represented five scales of the CPI that measure interpersonal skill.

To test the second hypothesis the aware and unaware groups were compared with regard to scores on the TMAS. The difference between the scores of the two groups was subjected to the $\chi^2$ test. The result supported Hypothesis 2, which states that the degree of awareness of the reinforcement contingency is inversely related to level of anxiety.

The third hypothesis was tested by comparing the mean scores of the aware and unaware groups on the five scales of the CPI. Five separate $t$ tests were performed. The results of the $t$ test for the Social Presence and Self Acceptance scales supported Hypothesis 3, which states that the degree of awareness of the reinforcement contingency is directly related to measures of interpersonal skill. Group differences with respect to Dominance, Capacity for Status, and Sociability, were in the predicted direction, though they did not meet the .05 level criteria for the rejection of the null hypothesis.

To test the fourth hypothesis the aware and unaware groups were compared with regard to increase of frequency
of aggressive responses on ten trials to the word association test. The results of an analysis of variance did not allow the rejection of Hypothesis 4, which states that the increase in frequency of verbal behavior that has negative cultural connotations is not related to awareness of the reinforcement contingency. The aware and unaware groups did not differ in level of conditioning, but they differed in overall response level. The aware group gave more aggressive responses throughout the ten trials than the unaware group.

The fifth hypothesis was tested by comparing the aware and unaware groups with regard to response time, which consisted of the time that elapsed from the moment the stimulus word was said to the time the third response was given. The significance of the difference between the response time scores of the two groups was estimated with the $\chi^2$ test. The result did not support Hypothesis 5, which states that the degree of awareness of the reinforcement contingency is inversely related to length of response time. It seemed probable that response time might be related to other personality variables and that the failure to control these variables contributed to the negative results in this case.

One of the interesting results was that 41 per cent of the subjects in the experimental group were fully aware, by the definition of the experiment, and 92 per cent were aware that they had given aggressive verbal responses more
frequently than any other class of responses. This was a very high percentage as compared with the reported 4 per cent of aware subjects in the other studies. It seemed possible that the positive reinforcement of verbal behavior with negative cultural connotations might have created a conflict which resulted in increased awareness, at least awareness of the conditioned behavior itself.
BIBLIOGRAPHY


Dunn, S., Bliss, J. & Siipola, E. Effects of impulsivity, introversion and individual values upon association under free conditions. *J. Pers.*, 1958, 21, 61-76.


Taffel, C. Anxiety and the conditioning of verbal behavior. 

Thorndike, E. L., & Lorge, I. The teachers' word book of 
30,000 words. New York: Bureau of Publications, Teachers 
College Columbia University, 1944.

Verplanck, W. S. The control of the content of conversation: 
reinforcement of statements of opinion. J. abnorm. soc. 
Psychol., 1955, 51, 668-676.
APPENDIX A

WORD ASSOCIATION TEST
WORD ASSOCIATION TEST

First column: ordinal numbers.

Second column: connotation of words, a-aggressive, n-neutral.

Third column: list of words.

Fourth column: relative frequency of word use (1- first thousand etc.), according to the Thorndike and Lorge lists.

Fifth column: grammatical form, v- verb, n- noun, vn- used both as verb and as noun, adj- adjective.

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APPENDIX B

AWARENESS QUESTIONNAIRE
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1. What do you think was the purpose of this experiment?

2. Did you usually give the first three words that came to your mind? If not, how did you decide which words to say?

3. What words came to your mind which you decided not to say?

4. Was there any particular kind of words that you said more often than others? If there was, what kind of words were they, and why do you think that you said them more often?

5. Did you notice any change in the kind of words you said? If you did, when did this change occur and why?

6. Did you notice anything that I did or said during the experiment? If the answer is yes, when did I do this and why?

7. Did this behavior on my part have any effect on the kind of words that you said? (Only if question 6 is answered in the affirmative.)

8. How did you feel in general during the experiment, comfortable or uneasy, and why do you think that you felt that way?
APPENDIX C

PERSONALITY QUESTIONNAIRE
Directions: Read each of the following statements and decide how you feel about it, and then mark your answer on the special answer sheet. If you agree with a statement, or feel that it is true about you, answer TRUE. If you disagree with a statement, or feel that it is not true about you, answer FALSE.

Mark your answer by making a (X) cross on the answer sheet. Make sure that the number of the statement is the same as the number on the answer sheet. Be sure to answer either TRUE or FALSE for every statement, even if you have to guess at some.

1. I enjoy social gatherings just to be with people.
2. The only interesting part of the newspaper is the "funnies."
3. I looked up to my father as an ideal man.
4. I do not tire quickly.
5. I am often sick to my stomach.
6. A person needs to "show" off a little now and then.
7. I am about as nervous as other people.
8. Our thinking would be a lot better off if we would just forget about words like "probably", "approximately", and "perhaps."
9. I get very nervous if I think that someone is watching me.
10. When in a group of people I usually do what the others want rather than make suggestions.

11. I have very few headaches.
12. Some people exaggerate their troubles in order to get sympathy.
13. I work under a great deal of strain.
14. I cannot keep my mind on one thing.
15. I always follow the rule: business before pleasure.
16. I worry over money and business.
17. I would like to be a journalist.
18. I frequently notice my hand shakes when I try to do something.
19. My daily life is full of things that keep me interested.
20. In most ways the poor man is better off than the rich man.

21. Clever, sarcastic people make me feel very uncomfortable.
22. I gossip a little at times.
23. I doubt whether I would make a good leader.
24. I blush as often as others.
25. I have diarrhea once a month or more.
26. I worry quite a bit over possible troubles.
27. I practically never blush.
28. I tend to be on my guard with people who are somewhat more friendly than I had expected.
29. It is hard for me to start a conversation with strangers.
30. I sometimes pretend to know more than I really do.

31. As a child I used to be able to go to my parents with my problems.
32. Women should not be allowed to drink in cocktail bars.
33. I am often afraid that I am going to blush.
34. When someone does me a wrong I feel I should pay him back if I can, just for the principle of the thing.
35. I have nightmares every few nights.
36. My hands and feet are usually warm enough.
37. I sweat very easily even on cool days.
38. When embarrassed I often break out in a sweat which is very annoying.
39. I seem to be about as capable and smart as most others around me.
40. I think I would enjoy having authority over other people.
41. I do not often notice my heart pounding and I am seldom short of breath.
42. I find it hard to keep my mind on a task or job.
43. I feel hungry almost all the time.
44. I am very seldom troubled by constipation.
45. Some of my family have quick tempers.
46. I have sometimes stayed away from another person because I feared going or saying something that I might regret afterwards.
47. I get very tense and anxious when I think other people are disapproving of me.
48. I have a great deal of stomach trouble.
49. I liked school.
50. I think Lincoln was greater than Washington.

51. At times I lose sleep over worry.
52. A windstorm terrifies me.
53. I am embarrassed by dirty stories.
54. My sleep is restless and disturbed.
55. I would disapprove of anyone's drinking to the point of intoxication at a party.
56. I often dream about things I don't like to tell other people.
57. I used to keep a diary.
58. It is very hard for me to tell anyone about myself.
59. I often feel as if the world was just passing me by.
60. When I get bored I like to stir up some excitement.

61. I am afraid of deep water.
62. There have been times when I have been very angry.
63. I usually feel nervous and ill at ease at a formal dance or party.
64. I have at one time or another in my life tried my hand at writing poetry.
65. Most of the arguments or quarrels I get into are over matters of principle.
66. I am easily embarrassed.
67. My feelings are hurt easier than most people.
68. People often expect too much of me.
69. I would do almost anything on a dare.
70. With things going as they are, it's pretty hard to keep up hope of amounting to something.

71. I take a rather serious attitude toward ethical and moral issues.
72. I would like the job of a foreign correspondent for a newspaper.
73. People today have forgotten how to feel properly ashamed of themselves.
74. I must admit that I often do as little work as I can get by with.
75. I like to be a center of attention.
76. I like to listen to symphony orchestra concerts on the radio.
77. I often find myself worrying about something.
78. I would like to see a bullfight in Spain.
9. I can be friendly with people who do things which I consider wrong.
10. I have no dread of going into a room by myself where other people have already gathered and are talking.

1. When in a group of people I have trouble thinking of the right things to talk about.
2. I wish I could be as happy as others.
3. I am usually calm and not easily upset.
4. I set a high standard for myself and I feel others should do the same.
5. School teachers complain a lot about their pay, but it seems to me that they get as much as they deserve.
6. I cry easily.

7. I have no treat of going into a room by myself where other people have already gathered and are talking.
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12. School teachers complain a lot about their pay, but it seems to me that they get as much as they deserve.
13. I cry easily.
1. I would rather go without something than ask for a favour.
2. I often do whatever makes me feel cheerful here and now, even at the cost of some distant goal.
3. I have been afraid of things or people that I know could hurt me.
4. I usually don't like to talk much unless I am with people I know very well.
5. I am inclined to take things hard.
6. I am quite often not in on the gossip and talk of the group I belong to.
7. Only a fool would ever vote to increase his own taxes.
8. When I meet a stranger I often think that he is better than I am.
9. Once in a while I laugh at a dirty joke.
10. Before I do something I try to consider how my friends will react to it.
11. In a group of people I would not be embarrassed to be called upon to start a discussion or give an opinion about something I know well.
12. I have no patience with people who believe there is only one true religion.
13. If given the chance I would make a good leader of people.
14. Sometimes at elections I vote for men about whom I know very little.
15. I like to go to parties and other affairs where there is lots of loud fun.
16. I certainly feel useless at times.
17. I very much like hunting.
18. I find it hard to keep my mind on a task or job.
19. I have frequently found myself, when alone, pondering such abstract problems as free will, evil, etc.
20. At times I have worn myself out by undertaking too much.
21. I love to go to dances.
22. I feel uneasy indoors.
23. I usually expect to succeed in things I do.
24. People pretend to care more about one another than they really do.
25. I am more self conscious than most people.
26. Most people worry too much about sex.
27. It is hard for me to find anything to talk about when I meet a new person.
28. I like to read about history.
29. I much prefer symmetry to asymmetry.
30. I would rather be a steady and dependable worker than a brilliant but unstable one.
31. I am apt to show off in some way if I get the chance.
32. I am the kind of person who takes things hard.
33. I am a very nervous person.
34. A person does not need to worry about other people if only he looks after himself.
35. I can honestly say that I do not really mind paying my taxes because I feel that's one of the things I can do for what I get from the community.
36. The future is too uncertain for a person to make serious plans.
37. I am a good mixer.
38. Most of the time I feel happy.
39. When a man is with a woman he is usually thinking about things related to sex.
40. I like large, noisy parties.
61. When prices are high you can't blame a person for getting all he can while the getting is good.
62. In school I found it very hard to talk before the class.
63. Life is often a strain for me.
64. At times I think I am no good at all.
65. I usually feel that life is worthwhile.
66. I am a better talker than listener.
67. I like science.
68. I am not at all confident of myself.
69. I am bothered by people outside, on streetcars, in stores etc., watching me.
70. Sometimes I rather enjoy going against the rules and doing things I'm not supposed to.
71. I have no fear of water.
72. I enjoy many different kinds of play and recreation.
73. A large number of people are guilty of bad sexual conduct.
74. I like to read about science.
75. It is hard for me to act natural when I am with new people.
76. I refuse to play some games because I am not good in them.
77. I think I would like to belong to a singing club.
78. I think I would like to belong to a motorcycle club.
79. I would be willing to give money myself in order to right a wrong, even though I was not mixed up in it in the first place.
80. I would like to be an actor on the stage or in the movies.
81. Police cars should be especially marked so that you can always see them coming.
82. We should cut down on our use of oil, if necessary, so that there will be plenty left for the people fifty or hundred years from now.
83. When the community makes a decision, it is up to a person to help carry out the plan even if he had been against it.
84. I would rather have people dislike me than look down on me.
85. I must admit I try to see what others think before I take a stand.
86. People should not have to pay taxes for the schools if they do not have children.
87. I don't like to face a difficulty or make an important decision.
88. In a group, I usually take the responsibility for getting people introduced.
89. I would be willing to describe myself as a pretty "strong" personality.
90. I am very confident of myself.
91. There are times when I act like a coward.
92. I must admit I am a pretty fair talker.
93. I have strong political opinions.
94. I think I am usually a leader in my group.
95. I seem to do things that I regret more often than other people do.
96. Disobedience to any government is never justified.
97. I enjoy planning things, and deciding what each person should do.
98. I would rather not have very much responsibility for other people.
99. I usually have to stop and think before I act even in trifling matters.
100. It is pretty easy for people to win arguments with me.
201. I have not lived the right kind of life.
202. I have a natural talent for influencing people.
203. I like to give orders and get things moving.
204. I am embarrassed with people I do not know well.
205. The one to whom I was most attached and whom I most admired as a child was a woman (mother, sister, aunt, or other woman).
206. I'm not the type to be a political leader.
207. People seem naturally to turn to me when decisions have to be made.
208. I dislike to have to talk in front of a group of people.
209. I have more trouble concentrating than others seem to have.
THE CONDITIONING OF VERBAL BEHAVIOR WITH NEGATIVE CULTURAL CONNOTATIONS

Abstract of a dissertation

Submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy

BOSTON UNIVERSITY GRADUATE SCHOOL

by

Meira Ellen Zedek

B.A., Hebrew University, 1954
A.M., Boston University, 1955

Department of Psychology
Field of Specialization: Clinical Psychology
Major Instructor: Professor Chester C. Bennett
This study deals with two main problems: the effect of positive reinforcement on verbal behavior with negative cultural connotations, and the relationship of awareness of the reinforcement contingency to personality and performance variables.

The specific hypotheses tested in this study are:
1. The frequency of verbal behavior that has negative cultural connotations increases when the behavior receives positive reinforcement.
2. The degree of awareness of the reinforcement contingency is inversely related to level of anxiety.
3. The degree of awareness of the reinforcement contingency is directly related to measures of interpersonal skill.
4. The increase in frequency of verbal behavior that has negative cultural connotations is not related to awareness of the reinforcement contingency.
5. The degree of awareness of the reinforcement contingency is inversely related to length of response time.

Verbal behavior with negative cultural connotations was operationally defined as verbal responses connoting aggression. The verbal stimulus "Em Mm" was
used as reinforcer. Awareness was defined as the verbalization of the contingency of the reinforcement on verbal responses connoting aggression. Anxiety was defined as scores on the Taylor Manifest Anxiety Scale (TMAS).

Measures of interpersonal skill were defined as scores on five scales of the California Psychological Inventory (CPI): Social Presence, Self Acceptance, Dominance, Capacity for Status, and Sociability.

To test the first hypothesis, an experimental group consisting of thirty nine subjects and a control group consisting of twenty subjects were given a word association test, consisting of fifty aggressive and fifty neutral words. The subjects were asked to say three words in response to each stimulus word. From the twenty first stimulus word on, the subjects in the experimental group received reinforcement whenever they gave an aggressive response. The control group did not receive this reinforcement. The responses were recorded and timed. Response time consisted of the time the subjects required to give three response words to each stimulus word. The two groups were then compared with regard to increase in frequency of aggressive responses.

To test the remaining four hypotheses, the experimental group was interviewed to ascertain the presence or absence of awareness of the reinforcement contingency.
The group was divided accordingly into two groups, the aware group consisting of sixteen subjects and the unaware group consisting of twenty three subjects. These two subgroups were given a questionnaire containing items from the TMAS and the five scales of the CPI. The groups were then compared with regard to scores on this test measuring level of anxiety and interpersonal skill. They were also compared with regard to level of conditioning, as measured by the increase of aggressive responses to the word association test, and with respect to response time scores.

The experimental findings supported the first hypothesis and indicated that the frequency of occurrence of verbal behavior with negative cultural connotations increased when the behavior was reinforced.

With regard to the hypotheses dealing with awareness, the results supported the second and third hypothesis and showed that degree of awareness was inversely related to level of anxiety, and directly related to measures of interpersonal skill. High degree of awareness was associated with low level of anxiety and vice versa. High degree of awareness was also associated with high level of social presence and self acceptance and vice versa. The experimental findings concerning the relation of awareness to personality variables such as dominance, capacity for status, and sociability, were in the predicted direction
but the statistical analysis of the results did not demonstrate population differences.

The results also supported the fourth hypothesis and indicated that degree of awareness was not related to level of conditioning, it was, however, related to overall response level.

The hypothesized relationship between degree of awareness and length of response time was not supported by the experimental results.
I was born on August 19, 1926, in Cologne, Germany, to Margot and Friedrich Oschinsky.

In 1934 we emigrated to Israel. I attended schools in Tel Aviv and graduated from Geula High School in 1944. In 1946 I entered the Hebrew Teachers’ College in Jerusalem from which I graduated in 1948. I proceeded to work as an elementary school teacher until 1953.

I entered the Hebrew University in 1951 and received the B.A. degree in 1954. From 1953 to 1954 I worked as a psychologist in the Israel Defense Army.

In 1954 I came to the United States and entered the Boston University Graduate School. I received the A.M. degree in Psychology in June 1955. In the fall of the same year I was accepted in the Clinical Psychology training program.
In the summer of 1956 I married Mishael Zedek and moved subsequently to Berkeley, California. From 1956 to 1958 I was a trainee in Psychology at the Langley Porter Neuropsychiatric Institute in San Francisco, California.