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Conditioning Verbal Behavior: The Effect of Experimenter Baseline Behavior on the Conditioning of Opinion Statements Emitted by Undergraduate Students

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CONDITIONING VERBAL BEHAVIOR: THE EFFECT OF EXPERIMENTER BASELINE BEHAVIOR ON THE CONDITIONING OF OPINION STATEMENTS EMITTED BY UNDERGRADUATE STUDENTS

by

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William E. Greable

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ABSTRACT

Conditioning Verbal Behavior: The Effect of Experimenter Baseline Behavior on the Conditioning of Opinion Statements Emitted by Undergraduate Students

by

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The general purpose of this study was to investigate the influence of the operant conditioner's behavior during the baseline upon subsequent operant conditioning of opinion statements emitted by freshmen undergraduate students. Specifically, the study attempted to answer the following research questions:

1. Is it possible to systematically condition opinion statements in a verbal conditioning situation that resembles a counseling interview?

2. Does the behavior of the operant conditioner during the baseline have any influence on subsequent conditioning of opinion statements in a verbal conditioning situation resembling a counseling interview?

3. Is there a difference in the number of opinion statements emitted in a verbal conditioning situation resembling a counseling interview for males and females?

4. Is there any interaction between the baseline behavior of the operant conditioner, the sex of the subject, and the stage of treatment in the conditioning of opinion statements?

Subjects for the study were freshmen undergraduate students. Two experiments were conducted in which each subject was seen individually twice in an "interview" setting. Treatments were administered in an ABAB design with each stage lasting twenty-five minutes. All "interviews" were taped and listeners listened to the tapes and tabulated opinion and non-opinion statements for each stage. The operant conditioners recorded opinion statements as they occurred by pressing foot switches that activated counters in another room. The correlation between the numbers of opinion statements tallied by the operant conditioners and the listeners was .98 in both experiments.

In experiment one, a trained undergraduate operant conditioner administered four treatments to forty subjects. There were five males and five females in each treatment condition. Treatments one, two, and four consisted of continuous verbal reinforcement being administered for the emission of opinion statements during stages two and four. For treatment one the baseline and return to baseline conditions consisted of silence by the operant conditioner. During treatment two, the operant conditioner administered random reinforcements on an average of two and one-half minutes during stages one and three. During the baseline and return to baseline conditions for treatment four the operant conditioner and the subjects engaged in normal conversation. Treatment three subjects received silence from the operant conditioner during the baseline and return to baseline conditions and engaged in normal conversation with the operant conditioners during stages two and four.

In experiment two, a different trained undergraduate operant conditioner administered three treatments to thirty subjects, five

males and five females in each treatment condition. In treatment one random reinforcement during the baseline and return to baseline was followed by variable interval reinforcement administered on an average of every two and one-half minutes. Treatment two consisted of random reinforcement followed by continuous reinforcement. During treatment three non-opinion statements were reinforced on a variable interval schedule of two and one-half minutes during the baseline and return to baseline stages, and opinion statements were reinforced on a variable interval schedule of two and one-half minutes during the conditioning stages.

The major findings indicated that:

1. Verbal conditioning occurred under continuous reinforcement conditions and when variable interval reinforcement was preceeded by reinforcement of non-opinion responses.

2. The baseline behavior of the operant conditioner was not a stastically significant factor in subsequent conditioning of opinion statements.

3. There was no difference in the number of opinion statements emitted by males and females.

4. There were significant interactions between the baseline behavior of the operant conditioner, the sex of the subject, and the stage of treatment in the conditioning of opinion statements.

(141 pages)

CHAPTER I

INTRODUCTION

The counseling of students is a vital part of the function of student personnel workers in the college setting. Traditional forms of counseling and psychotherapy have for the most part approached the amelioration of the clients "problems" by attempting to deal with the inner psychic determinants that were presumed to be the cause of the maladaptive behavior. These traditional approaches were thus based on what Ullmann and Krasner (1965) have labeled the "medical model" approach to deviant behavior.

In the past few years, however, the medical formulation has been subjected to considerable criticism. Specifically, it has been demonstrated that the traditional approaches to counseling and psychotherapy leave much to be desired in terms of experimentally demonstrating much efficiency in improvement in or cure of various disorders (Wolpe, 1964; Eysenck, 1966, Eysenck, 1967).

In contrast to the medical model which assumes underlying causes for deviant behavior, the psychological model (Ullmann and Krasner, 1965) operates on the assumption that " ... maladaptive behavior is both learned and unlearned in the same manner as all other behavior" (p. 15). All counselors and psychotherapists are concerned with influencing the behavior of the client--otherwise they would not be engaged in counseling or psychotherapy (Patterson, 1963). The emphasis is therefore upon the modification of the behavior of the client. Those that subscribe to the psychological model of maladaptive behavior

attempt to modify the behavior of the client by focusing on the relevant overt behaviors emitted by the client. There is evidence that behavior therapy or behavior modification approaches are relatively more effective than the more traditional approaches (Eysenck, 1969; Wolpe, 1964).

Ullmann and Krasner (1969) note that there are currently several different approaches to modifying behavior but that positive reinforcement of selected responses is " ... perhaps the most basic technique of behavior modification" (p. 257). The technique of positive reinforcement of responses or classes of responses grew out of Skinner's (1938) work on operant conditioning.

> The basic principle in Skinner's work was the Law of Reinforcement which states that when certain types of specific consequences follow a response, that response will increase in frequency. (Holz and Azrin, 1966, p. 791)

The most frequent and perhaps the most important responses that occur in counseling and psychotherapy are verbal in nature. In recent years a great deal of research has been done in the area of verbal conditioning. Reviews of the literature (Krasner, 1958; Salzinger, 1959; Greenspoon, 1962; Krasner, 1965; Speilberger, 1962; Williams, 1964; Kanfer, 1968; Hernsen, 1970) indicate that the verbal operant responses of a client or subject may be operantly conditioned using a wide variety of reinforcers. As a result of the large number of studies in this area which produced positive results, and a general dissatisfaction with the more traditional approaches to counseling and psychotherapy, psychologists in large numbers have extrapolated findings from verbal conditioning experiments to behavior change in counseling and psychotherapy. Indeed, the idea has been advanced that:

> ... all forms of psychotherapy derive their effectiveness from the reinforcing power of the therapist and that the inefficiencies in psychotherapy derive from the therapists' lack of recognition of their own reinforcing properties. (Heller and Marlatt, 1969, p. 575)

While the general trend of the results of verbal conditioning experiments has been postive, there are a number of methodological and procedural problems that warrent further research in this area. Holz and Azrin (1966) note that such problems as the delimitation of the response class, the delimitation of response units, defining operant level, determining the adequacy of the reinforcing stimulus, and eliminating the biases of the observers and experimenters complicate the interpretation of the results of many studies of verbal conditioning and specifically that there is a serious question of whether or not these results should be uncritically extrapolated to counseling and psychotherapy.

A significant conclusion reached by Heller and Marlatt (1969) is that " ... verbal conditioning effects have been demonstrated only when the experimenter (or interviewer) remains minimally responsive." (p. 578). In verbal conditioning experiments the experimenter typically remains silent except when administering the "reinforcing" stimulus. It is usually assumed that the silence of the interviewer during the baseline is equivalent to no treatment. It is also assumed that any increase in verbal operant behavior, therefore, must be due to the reinforcing effects of the consequences of the subjects responses.

The results of an experiment by Heller, Davis, and Myers (1966) pose a serious challenge to the above assumptions. These experimenters found that silence on the part of the interviewer was verbally inhibiting as compared to four other conditions of interviewer responsiveness.

They concluded that " ... in an interview, silence on the part of one participant is far from representing a neutral condition against which the natural state of the other person can be measured." (p. 218) The implication of the Heller, Davis, and Myers study is that the cue value of the reinforcing stimulus may be excessively enhanced if the interviewer is silent except when emitting this reinforcing stimulus. It is because of this possibility that " ... response increases during conditioning over that obtained at the operant level with the interviewer silence may represent a spurious change." (Heller and Marlatt, 1969, p. 579) The suggestion thus is that the behavior of the Experimenter (E or E's) during the baseline or operant period may influence subsequent operant conditioning of verbal responses. If this is indeed the case a comparison of the rate of responding under reinforcement conditions with the rate of responding during the operant period--on the baseline--might yield results which are not really applicable to counselingand psychotherapy--especially if the E is silent during the baseline. Heller and Marlatt go on to state that:

> A better test of conversational conditioning would involve embedding the reinforcing stimulus in a larger, more naturally occurring verbal stimulus and determining operant levels by using a schedule of interviewer responding that is noncontingent with the class of subject response to be subsequently reinforced, such as fixed-interval responding. (p. 579)

These authors also note that the results of verbal conditioning experiments that utilized a more than minimally responsive experimenter have been disappointing.

A problem of major importance in verbal conditioning experiments is the delimitation of response classes. Many experimenters have attempted to manipulate such response classes as plural nouns (e.g.,

Greenspoon, 1955) and verbs or adverbs (e.g., Craddick and Campitel, 1963). While some success has been achieved in conditioning response classes of this nature, major difficulties in classifying words as belonging or not belonging in certain classes have been noted (Holtz and Azrin, 1966). If consistency in definition of response class or response units is not present, there can be a lack of consistency in applying the reinforcers. One approach that seems promising is to focus on natural response classes as the target behaviors to be reinforced. Natural response classes are groups of words related by a common thematic thread (Salzinger, 1959). Natural response classes, such as opinion statements, are already in the subject's repertoire of responses, are usually relatively unambiguous, and are relatively easy to differentiate from other response classes. Thus, in addition to being more relevant to the counseling situation than such response classes as plural nouns, etc., natural response classes should be easier to define and reinforce properly than other types of response classes.

Verplanck (1955) was one of the first to attempt conditioning of opinion statements. He defined opinion statements as those that include such phrases as "I think," "I believe," "It seems to me," etc. Verplanck's study was different than many studies of verbal conditioning because the experimenters attempted to condition the verbalizations in the context of a normal conversation. Verplanck's experimenters were relatively successful in conditioning verbal opinion statements but he noted that such limitations as the possibility of the undergraduate experimenters falsifying data in order to conform to the expectations involved in the experiment necessitated further research in this area.

Other experimenters (e.g., Azrin et al., 1961; Ulrich, 1962) conducted studies that were similar to the study reported by Verplanck. These experimenters failed to support Verplanck's conclusion that it was possible to condition opinion statements in a conversational setting with little difficulty. Indeed, they found that the results depended more upon the E's expectations as to outcome than upon the Subject's (S or S's) actual behavior.

A study by Centers (1963) however, indicated that controls can be introduced into the conditioning setting which refine the techniques and perhaps lead to more valid results than had been previously obtained. The E in Center's study was a male research assistant who was perceived as being a member of the class from which the subjects were taken. The E attempted to condition several types of response classes, one which was opinion statements, in "ordinary conversational" setting. This setting was a room in which the S's were told to wait until their turn came to participate in an experiment. In reality, the experiment was carried out while the S's were waiting to participate in the nonexistent experiment. The target responses were explicitly defined after a few trial runs and during the experiment per se all verbalizations were surreptitiously recorded. E then listened to the tapes of the conversations and tabulated the responses during the various stages of the experiment. The overall results indicated that it was possible to condition certain statements in this setting. However, it is important to note that approximately one-fourth of the S's failed to show an increase in emission of opinion statements during the reinforcement condition. In addition a non-significant but suggestive sex difference in

responsiveness to the reinforcing stimuli was observed. Males tended to condition more readily than females, although the difference was not statistically significant.

An important aspect of Center's study was that he recognized that certain types of reinforcement are necessary if conversation is to be maintained. Accordingly, he utilized attention as a generalized reinforcer for maintaining the conversation as well as allowing E to answer questions asked by the S's. In addition, E used agreement and paraphrases as reinforcers for opinion statements.

Centers also noted that Verplanck's (1955) definition of opinion statements was inadequate. Many opinions are expressed that do not begin with such qualifying phrases as "I think," "I feel," etc. In addition, phrases like "I feel" may preface statements that are not opinion statements. An example would be "I feel lousy today."

The study reported by Centers is an improvement over many studies of a similar nature. There are, however, certain defiences which should be noted, especially if the results are to extrapolated to the counseling situation. Although the study was conducted in a conversational atmosphere, it was conversation between a subject who perceived the E as a peer, and a relatively untrained E. Usually a counselor is well trained, experienced, and has a relatively high degree of status. Also, the stages of the experiment were only 10 minutes in length. This is a very short time compared to the typical counseling or quasi-counseling interview. Indeed it seems possible that the failure of some S's to evidence conditioning might be related to the brevity of the conditioning stages. In addition, the experimental stages included an operant period, a reinforcement

condition, an extinction condition, but no reconditioning period which is necessary to demonstrate the influence of an adequate reinforcer. Also, no control group was used to investigate the effects of familiarity with the E upon the emission of the target responses. Factors such as familiarity with E and fatique are factors which could be relevant to the emission of verbal behaviors. Finally, the only person to record responses was the E. Without adequate controls for bias by E in defining and recording opinion statements, the results of the experiment remain suspect.

At this point the following statements may be made in summary:

1. The results of numerous studies indicate that verbal responses can be operantly conditioned in experimental and quasi-therapeutic interviews.

2. Methodological and procedural problems, however, complicate the interpretation and evaluation of many of the studies of verbal conditioning.

3. Natural response classes, such as opinion statements, occur frequently in conversation, are relatively unambiguious as compared to other response classes and thus are easier to define and reinforce properly, and are more relevant to the counseling setting than are response classes such as plural nouns, verbs, etc.

4. The questions of the influence of experimenter baseline behavior and the sex of the subject in verbal conditioning need further investigation.

Purpose of the study

The purpose of this study was to assess the influence of the operant conditioner's behavior during the baseline upon the

subsequent operant conditioning of opinion statements made by freshmen undergraduate students.

The research questions

Research question number one. It is possible to systematically condition opinion statements in a verbal conditioning situation that resembles a counseling interview?

Research question number two. Does the behavior of the operant conditioner during the baseline have any influence on subsequent conditioning of opinion statements in a verbal conditioning situation resembling a counseling interview?

Research question number three. Is there a difference in the number of opinion statements emitted in a verbal conditioning situation resembling a counseling interview for males and females?

Research question number four. Is there any interaction between the baseline behavior of the operant conditioner, the sex of the subject, and the stage of treatment in the conditioning of opinion statements?

Definitions

1. Verbal reinforcement is defined as the presentation to the subject of one of three verbal stimuli contingent upon the subject's emission of an opinion statement: (a) a paraphrase of the subject's utterance; (b) a neutrally toned "mmhmm" with a slight affirmative head nod; or (c) the statement "good."

2. An opinion statement is defined as any meaningful utterance by the subject consisting of a statement of a statement or belief or thought concerning a debatable matter; an expression of evaluation;

or a statement which is obviously not a fact. These statements may or may not begin with a qualifying phrase such as "I believe," "It seems to me," "I'd say that ...," etc.

3. Normal conversation is defined as verbal interchange between the subject and the operant conditioner without reinforcement (as defined above) being administered by the operant conditioner contingent upon the emission of opinion statements, without the operant conditioner asking questions designed to evoke opinion statements, and without the operant conditioner giving his own opinions on any subject.

4. Silence is defined as the condition during which the operant conditioner gives the subject attention but no other reinforcements or conversation other than prompts (to be described below) after a certain period of silence by the subjects, and answers to the questions that the subject asks.

Limitations of the study

1. The study was limited to the conditioning of opinion statements emitted by freshmen college students at Simpson College. No subjects from any other population were included.

2. No attempt was made to influence any specific opinions on any particular subject nor was there any measurement of attitude change following exposure to treatments.

3. No attempt was made to investigate the influence of individual differences, other than sex, in the subjects upon the success of the different treatments administered.

4. No attempt was made to investigate the influence of individual differences in the operant conditioners upon the success of the different treatments administered.

5. No attempt was made to investigate the question of the effect of awareness by the subjects of the treatments being administered upon the success of the different treatments administered.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

The present study was concerned with the behavior of the operant conditioner during the baseline and return to baseline conditions upon subsequent conditioning of opinion statements. The literature reviewed in this chapter delt with relevant findings in the areas of the operant conditioning of opinions, the effects of experimenter behaviors upon experimental and quasi-experimental performances by subjects, and the causal effects of relationship variables in counseling and psychotherapy.

The operant conditioning of opinions

Probably the most well known and the earliest of the studies in which opinion statements were operantly conditioned is the study reported by Verplanck (1955). In Verplanck's study seventeen members of a course entitled the "Psychology of Learning" attempted to operantly condition opinion statements emitted during ordinary conversation by a heterogeneous group of subjects in a wide variety of situations. The conversations lasted at least thirty minutes and were broken down into three stages each. Five treatments were administered. Four of these treatments involved an operant level for the first ten minutes, a reinforcement condition where the reinforcements consisted of agreement or paraphrases for the second ten-minute segment, and a final ten-minute segment where "extinction" was attempted by the E's either disagreeing with the opinions stated or simply not responding to any statement

emitted by the S's. A fifth treatment consisted of the E's reinforcing opinion statements with agreement during the first 10 minutes, an "extinction" period where the E's failed to respond to any statement made by the S's, and a final 10-minute segment which was identical to the first 10-minute segment of the conversation. Verplanck reported that all 17 E's were able to collect at least one set of data--that is they were able to attempt to condition at least one S. The E's recorded the opinions and non-opinions as they were emitted by "ticking off" the S's statements in the form of "doodles incorporating marks" or by making marks in other convenient places such as the margin of a book. The overall results indicated that all 24 S's showed an increase in the relative frequency of emission of opinion statements during the various reinforcement conditions. Twenty one of the S's showed a reduction in the relative frequency of emission of opinions during the "extinction" periods. The overall rates of speaking, however, did not change significantly during any of the conditions. Verplanck concluded that:

> This experiment shows that if, in what is ostensibly and ordinary conversation, one agrees with opinions expressed by a speaker, the speaker will give still more opinions, and that returning the speaker's words in paraphrase has the same effect. It also shows that disagreement reduces the number of opinions given, as does ignoring the speaker's statement. The verbal behavior of a speaker, apparently without regard to its content or setting, is under the control, not only of the speaker himself, but also of the person with whom he is conversing. (pp. 674-675)

The data reported by Verplanck (1955) thus indicated that it is possible to condition opinion statements in a conversational setting. He also suggested that the findings may be relevant to a wide variety of settings--one of which is concerned with the client-therapist relationship. There are, however, several deficiencies in the study which

are relevant to the present investigation. First of all, there was no control of the treatments which were administered by the different E's. Some E's administered some treatments while other E's administered other treatments. There was also no control of the selection of the S's. One S was engaged in conversation in a hospital ward, some S's were run in student living quarters, some in private homes, one in a public lounge, and one over the telephone. One E even performed the experiment with a date. There was also no control over relationship variables. Also, the E's recorded the S's responses in view of the S's. Although Verplanck stated that the method of recording responses caused no difficulties, it seems unlikely that it was totally uninfluential. Also, there was no check on the judgments of the E's as to what constituted an opinion statement nor was there a check on the numbers of opinions tallied by the E's. Indeed, there was the possiblity that at least some of the E's "made up" the data. Verplanck suggested, however, that this was unlikely.

Following Verplanck's (1955) publication other investigators began to study the operant conditioning of opinions. Hildum and Brown (1956) conducted a study in which opinion statements were conditioned during an opinion interview conducted over the telephone. They found that the reinforcer "good" was effective in conditioning opinion statements but that the utterance "mm-hmm" was not. Ekman (1958) found that both verbal and non-verbal reinforcement was effective in conditioning anti-capital punishment opinions in a structured interview situation. Azrin, et al. (1961) replicated Verplanck's results but noted that on close examination there were several difficulties including unreliability of identification of opinion statements and "dry running" that invalidated

the results. Their general conclusions were that the expectations of the E's seemed to have a strong influence on the data obtained; that when sufficient controls are introduced the S's will leave the conditioning situation within 10 minutes; and that objective recording and programming, preferably through the use of automatic apparatus, is desirable in verbal conditioning experiments. A study by Thalhofer (1969) supports the contention of Azrin et al. (1961) that experimenter bias on expectation may be the critical factor in the conditioning of opinion statements. Thalhofer's study, however, also lacks sufficient control in that the E's were free to choose their own topics of conversation and experimental situation. Since one group of E's predominantly choose an emotional issue for discussion the results of this "experiment" are suspect. The study reported by Centers (1963) and described in chapter one is an improvement over the studies by Verplanck (1955), Azrin et al. (1961), and Thalhofer (1969). Centers (1963) was able to demonstrate operant conditioning of opinion statements, but as was noted in chapter one, the study lacked adequate controls.

Several studies report success in conditioning opinions and also changing attitudes. Krasner, Ullmann, and Fisher (1964) demonstrated that it was possible to increase favorable opinion statements concerning "medical scientists" by the verbal reinforcement of questionnaire responses. In a similar study Krasner, Knowles, and Ullmann (1965) demonstrated conditioning of opinions favorable toward "medical science" (and by implication toward the experimenter) by following the "correct" responses by a variety of verbal and non-verbal reinforcers. These experimenters, however, were unable to operantly condition unfavorable opinions toward "medical science" under the conditions of the experiment.

They note that at least in the experimental situation as described in their study, the changes inoperant performance seemed to be related to the specific content which was being reinforced, and not to the reinforcement per se. In a situation where the examiner has considerable prestige and the subjects exhibit a favorable attitude toward him, verbal reinforcement alone may not be sufficient to modify opinions in an unfavorable direction.

Similar studies were conducted by Singer (1961), Prestholdt (1968), Prestholdt and Bigelow (1968), and Weiss and Weiss (1970). Singer (1961) had his experimental Ss respond to items read to them from the California F Scale. The Ss responded by indicating if they "agreed" or "disagreed" with the items. The Ss were reinforced with "good" or "right" each time they gave an answer in the "prodemocratic direction." The results indicated that reinforced subjects showed a significant increase in prodemocratic utterances as compared to a control group which received no reinforcement for emitting these responses. Prestholdt and Bigelow (1968) administered social disapproval for "incorrect" opinions and social approval the emission of "correct" opinions during one experimental condition. During another condition only reinforcements were administered for the "correct" statement. The results of this study indicated that a combination of reinforcement and punishment was more effective than simple reinforcement or no reinforcement (control) in conditioning "attitudinal operants." Prestholdt (1968), however, found that while social reinforcement was effective in increasing "correct" opinions and punishment was successful in decreasing "incorrect" responses, a combination of reinforcement and punishment was not significantly more effective

than the isolated use of either consequence by itself. Weiss and Weiss (1970) successfully attempted to condition "agree" and "disagree" responses to opinion statements using information as the reinforcement. They found that information could reinforce opinion responses, but that "secret information" was not more effective than "freely communicable information" in reinforcing the opinion responses.

A series of studies by Chester A. Insko (1965) and his colleagues provided additional evidence that opinions can be operantly conditioned and also that attitude change can result from this procedure. Insko (1965) found that graduate assistans were able to condition "agree" or "disagree" responses to opinion statements read to undergraduates over the telephone. An additional finding was that the procedure resulted in attitude change as measured by a questionnaire. Insko and Butzine (1967) also demonstrated significant conditioning of "agreement" or "disagreement" with statements read to Ss over the telephone. In addition, they found that rapport between the E and the Ss was significantly related to the conditioning effect. The reinforcement effect was greater with positive than with negative rapport. Insko and Melson (1969) compared the effectiveness of reinforcement of "agree" or "disagree" responses to opinion statements concerning pay television (TV) in a telephone conversation and a laboratory interview. These investigations found significant conditioning effects in both types of interviews indicating that the effects are common to a variety of situations.

Insko and Cialdini (1969) developed what they called a "two-factor" theory of attitudinal verbal reinforcement. According to this theory, attitudinal verbal reinforcement is a function of the two

factors of information and rapport. A positive reinforcement has an effect on opinions because it conveys information about the interviewer's attitude and it creates positive rapport. Insko and Cialdini state that:

> According to this interpretation one factor accounting for the reinforcement effect is the conveying of information as to the interviewer's attitude. This factor is, of course, what the informational interpretation takes as the entire explanation. The second factor is the creation of positive rapport or liking which serves to motivate conformity consistent with the conveyed information as to the interviewer's attitude. More specifically the 'good' does two things. First, it provides information as to the interviewer's attitude. Second, it tells the subject that the interviewer approves of or likes the agree-disagree responses and thus by implication approves of or likes the subject himself (p. 334)

Support for the "two-factor" theory came from the Insko and Butzine (1967) study and the Krasner, Knowles, and Ullmann (1965) study described above. Additional support came from a study by Cialdini and Insko (1969). Cialdini and Insko (1969) found that verbal reinforcement had an effect only when it was consistent with informational cues concerning the experimenter. This indicated that the conveying of information was one important factor in the efficiency of the reinforcement. It was also found that experimental subjects who received reinforcement liked the experimenter better than control subjects who did not receive reinforcement, indicating that rapport was also an important factor in the efficiency of verbal reinforcement.

The evidence thus indicates that while there are some methodological problems involved in the conditioning of opinions, it is possible to control the emission of opinion statements by manipulating the consequences of these statements. This operant conditioning of

opinion statements can occur in a variety of settings. While an operant conditioning analysis of the conditioning of opinion operants posits no hypothetical, mediating, or other unobservable variables, it seems apparant that stimulus control variables--such as the experimenter's positive or negative behaviors aside from administering reinforcements--do influence the efficiency of the reinforcements administered.

The effects of experimenter behaviors

The publication of Orne's (1962) article concerned with "the social psychology of the psychological experiment" stimulated considerable interest in investigation of influential variables other than those which were purposely manipulated in psychological experiments. Rosenthal (1966) has suggested that:

> To the extent that we hope for dependable knowledge in the behavioral sciences generally, and to the extent that we rely on the methods of empirical research, we must have dependable knowledge about the researcher and the research situation (p. viii).

Rosenthal (1966) reviewed several areas of concern that are relevant to the influence of the experimenter in psychological experiments and concluded that:

> It seems clear that there are a great many variables that affect the subjects response other than those variables which, in a given experiment, are specifically under investigation. The kind of person the experimenter is how he or she looks and acts, may by itself affect the subjects response (p. 109).

McGuigan (1963) and Kintz et al. (1965) also surveyed the literature and concluded that experimenter effects in psychological research are important and should not be ignored, and that further investigation of these effects is highly desirable.

A recent study by Hoffman, Schackner, and Goldblatt (1970) explored the effects of different experimenter-subject relationships upon performance in a later experimental situation. In this study sixty Ss were exposed to either a "friendly" E or a "neutral" E during an instructional phase of the experiment. One E provided both the "friendly" and the "neutral" conditions. During the "friendly" condition the E interacted with the Ss in a manner which could be considered friendly; ie., he showed the Ss friendly behaviors such as assisting the Ss to their chairs, engaging the Ss in casual conversation, and calling the Ss by their first names. During the "neutral" condition the E did not engage in such behaviors with the Ss. A second E who was not aware of the initial treatment each S received then administered the experimental task. The experimental task consisted of Ss identifying facial expressions of a set of standard photographs. This task was followed by a questionnaire designed to assess the S's reaction to the experimental session. The results indicated that the Ss exposed to the "friendly" E assigned significatly more photographs to the "Love-Mirth-Happiness" category than the Ss exposed to the "neutral" E. In addition, the Ss exposed to the "friendly" E checked significantly more positive adjectives on the post-experimental questionnaire than did the Ss exposed to the "neutral" E. The authors suggested that the study provided support for the contention that the behavior of the E does influence S's subsequent performance in a experiment. The results of this study are consistent with those of studies reviewed by Rosenthal (1966). Rosenthal concluded that the "social psychological attributes" of an E such as warmth, can influence the results of

observations in verbal conditioning, projective testing, intelligence testing, as well as in more "rigorous" experimental settings. Rosenthal (1966) stated that ..."more influence is exerted by a warm, or warmly perceived, experimenter than by a cold, or coldly perceived experimenter" (p. 83).

The influence of the warmth or coldness of an E has also been demonstrated in an "interview" setting. Pope and Siegman (1968) investiagted the influence of interviewer warmth and interviewer specificity on interviewee verbal behavior. In this study the interviewers (two female clinical psychology interns) interviewed 32 nursing students in a counterbalanced experimental design. During the "warm" interviews the interviewers smiled, nodded their heads, and spoke warmly. During the "cold" interviews the interviewers spoke with a drab, cold voice, did not nod their heads, and did not smile. A post-interview rating scale was given to assess the S's attitudes toward and perceptions of the interviewer. The results indicated that "warm" interviews led to greater verbal productivity by the Ss than "cold" interviews, but only when the first interview was the "warm" one. "Cold" interviews, when first, seemed to have an inhibiting effect on verbal productivity which lasted into the second interview. In addition the Ss exhibited a much more positive attitude toward the "warm" interviews and interviewers than they did toward the "cold" interviews and interviewers. An additional finding was that low specificity by the interviewer was associated with high interviewer productivity and uncertainty. This finding is consistent with other studies (Pope and Siegman, 1965; Siegman and Pope, 1965; Pope, et al., 1971) which

demonstrated a negative relationship between interviewer specificity level and interviewee productivity level and uncertainty (hesitation).

The Heller, Davis, and Meyers (1966) study cited in chapter one provided results that were inconsistent with those of Pope and Siegman (1968). Heller, Davis, and Meyers varied the friendliness-unfriendliness and the activity-passivity dimensions of several interviewers behaviors and assessed the influence of these variations on interviewee speaking time, content categories, and attitude toward the interviewer. These investigators found that "active-friendly" interviewers were liked best, while "passive-hostile" interviewers were liked least, but that "friendliness" on the part of the interviewer was not more effective in eliciting verbalizations from Ss than "unfriendliness." In fact, some evidence emerged which suggested that Ss might have felt more pressure to discuss "threatening" topics with the "unfriendly" (hostile) interviewers. A silence condition provided elicited the lowest talk time of all conditions. A major flaw in this study, however, makes the results suspect. Each "interviewer" operated under only one condition. Thus, there were different interviewers in each condition. The possibility of "task confounding" (Underwood, 1957) certainly exists because the dependent variable measures could well have been a function of variables other than those designated as "independent variables." The fact that there were four interviewers in each condition lessens the probability of task confounding but it does not eliminate it. All interviewers participated in the "silence" condition, however, which lends support to the reliability of the results of this condition. A study by Smith and Young (1968)

found results that were consistent with the results of the Heller, Davis, and Meyers (1966) study. Smith and Young varied the "friendliness" of a "therapist" during the first part of a group therapy session and assessed the effects of the manipulation on subsequent loquacity of the patients during the last part of the session. These investigators found no effect of "friendliness" upon the verbalizations of the patients. Shulman (1969), in a related study, also found that the actual role behaviors emitted by Es which varied along a friendly-cold dimension had very little effect on the Ss responses in an experimental situation. Maser (1968), on the other hand, found that client responses were influenced by "friendly counselor responses" in that "friendly counselor responses" were followed by "friendly clinet behaviors" whereas "hostile counselor responses" were followed by "hostile client behaviors." Also, Feitel (1968) found that there was no relationship between feeling "understood" in an interview situation and "therapist" verbal activity, but that "therapists" who spoke often and in short utterances made the interviewees feel "liked."

The first study designed to investigate the influence of the interpersonal relationship between the E and the S in a verbal conditioning experiment per se is that reported by Sapolsky (1960). Sapolsky reported two experiments which indicated that:

> The positive or negative qualities of the interpersonal relationship between S and E have related effects upon S's performance in a verbal conditioning situation (p. 245).

Before the actual conditioning task was undertaken in experiment one, 30 Ss received instructions that were designed to create either

high- or low-attraction between the Ss and the E. The conditioning task was patterned after Taffel's (1955) procedure which consists of the S making up sentences to words presented on a card. The verbalizations by the Ss were reinforced by the E saying "mmmhmm" in a "flat unemotional tone." The results of this experiment indicated that the "High-Attraction" Ss emitted the "correct" responses at a much higher rate under the reinforcement conditions than did the "Low-Attraction" Ss. Experiment Two delt with the influence of interpersonal need compatibility-incompatibility upon verbal conditioning. The results of experiment two indicated that the Ss who were compatible with the Es conditioned much better than the Ss who were incompatible with the Es. Sapolsky concluded that:

> The results of the two experiments support the major hypothesis that the positive or negative qualities of the interpersponal relationship between S and E have related effects upon S's performance in a verbal conditioning situation (p. 245).

Reece and Whitman (1962) reported a study in which the behaviors of the E during the verbal conditioning session were either "cold" or "warm." These investigators wanted to determine if "warmth" had a reinforcing influence upon verbal behavior and whether "warmth" combined with verbal reinforcement would be an efficient reinforcement condition. In this study 69 college students participated in a 15-minute "free association" procedure under one of four conditions: warm-reinforced, warm-nonreinforced, cold-reinforced, and cold-nonreinforced. During the "warm" conditions the E smiled at the S, leaned toward him, and looked directly at him. During the "cold" conditions the E did not smile at the S, he looked around the room rather than at the S, leaned away from him, and drummed his fingers.

Plural nouns were reinforced by the E saying "mmhmm" upon their emission. The results indicated that the greatest amount of verbalization occurred under the "warm" conditions. The warm-reinforcement condition produced the most total verbalizations. Also, the number of plural nouns emitted was greatest under the warm-reinforcement condition. The difference in number of plural nouns emitted by the warm-reinforcement group and the cold-reinforcement group, however, was not statistically significant. The greater number of plural nouns emitted under the reinforcement conditions thus was a function of the reinforcement and not of the "warmth" or "coldness" of the E.

A more recent study by Vitalo (1970) provided evidence that the interpersonal functioning of the E does have an effect on verbal conditioning. Vitalo selected Es that were either high- or low-functioning in terms of providing empathy, positive regard, and genuiness but comparable in other physical and social characteristics. These Es participated in the study without awareness of the real purpose of the study which was to investigate the influence of the "facilitative conditions" of empathy, positive regard, and genuiness upon verbal conditioning. The Ss were undergraduate students and each was seen twice, once by a high-functioning E and once by a low-functioning E in a counterbalanced design. Ss in the experimental groups received "mmmhmm" as a reinforcement for the "correct" response emitted in a Taffel-type of task. Ss in the control groups received random reinforcement in the same situation. The results indicated that the only Ss that showed conditioning significantly different from that of the control group were Ss that were seen by the high-functioning Es.

The low-functioning Es failed to produce conditioning effects. Vitalo suggested that the "facilitative dimensions" were thus significant interpersonal variables in this study and that when these dimensions were absent, normal verbal conditioning and extinction failed to occur. This study supported Rosenthal's (1966) conclusion that some Es are better verbal conditioners than other Es, and suggested that one reason might be the quality of the interpersonal relationsip offered during the conditioning process. Additional support for the contention that some Es are more effective than others came from a study by Denner (1970) where it was found that "crafty" Es were more effective verbal conditioners than "normal" Es. Namenek and Schuldt (1971) conducted a study similar to the Vitalo (1970) study. In the Namenek and Schuldt study Es who either scored high or low on the conditions of empathy, genuineness, and empathy attempted to condition Ss who were given one of two pre-experimental sets. One group of Ss received instructions indicating that genuineness, warmth, and empathy were important in human relations while the other group of Ss received instuctions in which specific reference to the factors of genuineness, warmth, and empathy was omitted. Each E attempted to condition three Ss under each of the two set conditions. The conditioning procedure involved reinforcement ("um-hmm") being administered upon the emission of "human" words. The results indicated that while "Verbal conditioning was not clearly demonstrated in this study" (p. 172), the Es high in the conditions "elicited" a higher percentage of human words than did the Es low in the conditions. There was also a significant interaction between set and experimental conditions offered.

Ss that interacted with the high-condition Es and received the set conditions emitted more "correct" responses than the Ss who did not receive the set conditions but interacted with the same Es. The reverse was true for the Ss that interacted with the low-functioning Es. Several flaws in the execution of the study, however, should be noted. First of all the ratings of the critical factors of empathy, genuiness, and warmth of the Es were made by "untrained raters." Secondly, the Es did not attempt to vary their behaviors. Each E participated in only one condition. And, thirdly, there is no evidence to indicate that the Es were unaware of the set producing instructions each S received. The authors suggest that the critical factor in the difference in percentage of "correct" responses given during the interaction with the high-low and low-condition Es was probably due to the difference in the E's ability to "elicit" the "correct" responses rather than to a greater or lesser enhancement of the power of the reinforcements administered by the different Es. This interpretation is inconsistent with the suggestion by Truax (Truax, 1966; Truax and Mitchell, 1971) that the reason that therapists high in empathy, warmth, and genuineness are effective is because these conditions are powerful positive reinforcers.

An area of direct relevance to the present study is the area concerned with the influence of the S's prior reinforcement history and experimental experience upon subsequent performance in operating conditioning situations. It has been suggested that the reinforcement history of a particular S will influence his reaction to social reinforcement (Baron, 1966). In addition, verbal conditioning seems

to depend on the S's prior experimental experiences (Kelly, 1968; Holmes and Appelbaum, 1970) as well as upon previously learned habits (Clance and Dixon, 1965; Dixon, 1965, 1966; Laungani, 1970).

Baron (1966) concluded that a S's past history of social reinforcement is important in his present receptivity to social reinforcement. The S's standard of social reinforcement, which is based on his past reinforcement history, may be discrepant from the rate of social reinforcement in a given experiment. If this discrepancy is large enough it may result in the S varying his performance in the verbal conditioning task in a direction that will lead to his being reinforced at a rate which he deems appropriate. Typically the rate will match or moderately exceed his standard of social reinforcement.

A series of studies by Weiner (1964, 1965, 1969a, and 1969b) and a study by Hardison (1969) explored the effects of reinforcement histories under various reinforcement schedules upon subsequent responding under different schedules of reinforcement. In these experiments human Ss were reinforced for pressing a "key" by receiving "points on a counter" under different schedules of intermittent reinforcement. The effects of this reinforcement history were then assessed by examining the patterns of responding emitted by the same Ss under different schedules of reinforcement. Weiner and Hardison both found that the response rates and patterns after the reinforcement histories were influenced by these histories. Hardison (1969) also found that instructions given to the Ss can be used to counter the effects of the reinforcement histories.

Two studies that are not free-operant conditioning studies are also relevant to the present investigation. Isawa (1969) compared the similarities and differences between reinforced test trials and non-reinforced test trials on subsequent learning in a paired-associate learning task. He found that test trials without reinforcement enhanced subsequent acquisition whereas test trials with reinforcement did not. He concluded that test rrials without reinforcement ..."potentiate the effectiveness of subsequent reinforcements" (p. 603). Brown and Merryman (1970) investigated the effects of six "rights" (reinforcements), six randomly administered "rights" and "wrongs", and no feedback at the beginning of a concept identification experiment. They found that both the noncontingent "rights" and the random "reinforcements" both retarded subsequent learning in concept identification as compared to no feedback.

Kelly (1968) investigated the effects of prior verbal or non-verbal experience on acquisition and awareness in a Taffel-type verbal conditioning situation. The preconditioning activity consisted of the Ss engaging in a word-saying task, completing sentences in a sentence-completion task or responding to a set of inkblots. After engaging in one of these preconditioning activities each S then began the verbal conditioning task. The experimental Ss received verbal reinforcement for using "activity verbs" while the control Ss received no reinforcements during the experimental task. The results indicated that the Ss who were exposed to the verbal activities of word-saying and sentence-completion pre-experimental conditions showed superior acquisition as compared to the Ss who

responded to inkblots or the control Ss. Kelly (1968) suggested that the superior acquisition was due to the similarity between the pre-experimental and the experimental tasks and that Es should attempt to control for the prior experience of Ss in verbal operant conditioning research. Holmes and Appelbaum (1970) also conducted a study concerned with the influence of prior experimental experience upon subsequent performance in a Taffel-type verbal conditioning task. These investigators exposed Ss to either a series of experiences designed to create a "positive experimental history," a series of experiences designed to create a "negative experimental history," or to a no experimental history condition. The major results indicated that the Ss with the "positive experimental history" were superior to the other Ss in the verbal conditioning task, in emitting cooperative behaviors, and in showing a positive attitude toward the experiments.

Research by Dixon and his associates (Clance and Dixon, 1965; Dixon, 1965; Dixon, 1966) and Laungani (1970) indicated that the Ss pre-experimentally acquired verbal habits can effect verbal conditioning at least in the Taffel-type situation. These investigators concluded that the personal and social values of the Ss and their pre-experimentally established verbal habits are more important determinants of the Ss verbalizations than are the "reinforcing" stimuli which are presented for the "correct" responses. The implications are that baseline measures are not really measures of the random frequency of responses and that words or utterances that are "emotional" in nature tend to be under the control of the Ss prior reinforcement history instead of the reinforcement conditions presented in the experimental setting

at least when the Taffel-type procedure is used. Laungani (1970) suggests that "...verbal conditioning with the Taffel procedure is considerably more complex than the operant conditioning of motor responses at infrahuman level" (pp. 41-42).

Relationship variables in counseling and psychotherapy

In the past two decades there has been an increasing emphasis on the empirical analysis of counseling and psychotherapy. Considerable attention has been focused on the relationship between the counselor or psychotherapist and the client.

Gardner (1964) reviewed the literature and concluded that the characteristics most frequently cited as desirable in the psychotherapeutic relationship were "... the therapist's warmth, acceptance, permissiveness, respect for the patient, and liking for the patient" (p. 426). Patterson (1967) wrote that there are four conditions that "... have been demonstrated to be related to the outcome of counseling" (p. 89). He listed these conditions as:

> (1) empathy, or the ability of the counselor to understand sensitively and accurately the clients inner experiences; (2) unconditional positive regard, or nonpossessive warmth and acceptance of the client; (3) self-congruence, or genuineness and transparency (authenticity) in the counseling relationship; and (4) concreteness, or specificity of expression. (p. 89)

Several reviews of the literature (eg. Bergin, 1967; Gardner, 1964; Patterson, 1967; Truax and Carkhuff, 1967; Tyler, 1969; Truax and Mitchell, 1971) indicate that the above characteristics of psychotherapeutic relationships are essential for positive results in psychotherapy and counseling. Johnson (1971), however, noted

that most of the evidence is correlational in nature and that "much of the research ... is of dubious quality" (p. 207). Johnson (1971) stated further that "Almost no hard empirical data indicates a causal relationship between the warmth, accurate understanding, and authenticity of the actor and constructive behaviors by the listener" (p. 207). The suggestion is that while there is considerable correlational evidence pertaining to the characteristics of effective counseling relationships, there is a dearth of experimental evidence demonstrating causal relationships between those characteristics and behavior change. There are, however, a few studies which have reported attempts to experimentally manipulate the therapeutic conditions offered in "therapeutic interviews." Truax and Carkhuff (1965) conducted a study in which they attempted to demonstrate a causal relationship between the therapist's level of accurate empathy and unconditional positive warmth and three schizophrenic patient's depth of self exploration during the initial psychotherapeutic interview. This interview was broken down into three 20-minute segments. During the first segment the therapist offered the patients high conditions of accurate empathic understanding and unconditional positive regard. This segment was followed by a segment where lowered levels were offered and finally by a segment where high levels of accurate empathy and unconditional positive warmth were again maintained by the therapist. Objective ratings by trained raters indicated that the therapist was successful in his attempts to manipulate levels of accurate empathy and unconditional positive regard. The results indicated that all three patients showed a significant drop in depth of

intrapersonal exploration during the segments where the conditions were lowered and a return to the higher previous level exhibited during the first segment when the conditions were reinstated. The findings clearly suggest that a causal relationship exists between the conditions of accurate empathy and unconditional positive regard offered by the therapist and depth of patient self-exploration which is postulated to be a critical element of patient behavior in therapy.

Holder, Carkhuff, and Berenson (1967) noted that in-patient psychotics, as the subjects were in the Truax and Carkhuff (1965) study, are probably functioning at ... "the very lowest levels of facilitative interpersonal dimensions" (p. 63). They therefore are probably relatively non-communicative and will explore themselves only when the counselor is offering high levels of "facilitative conditions." Holder, Carkhuff, and Berenson (1967) exposed three "high functioning" and three "low functioning" students to an experienced counselor who varied his "therapeutic responses" during three segments of an interview. During the first 20-minute segment the counselor offered high levels of facilitive conditions (as defined by previous research). During the middle 20-minute segment the counselor offered low levels of conditions and during the final segment of the interview he reinstated high levels. The dependent variable was again depth of self-exploration. The results indicated that the manipulation of therapeutic conditions affected high and low functioning clients differently. The high functioning clients functioned at a higher level than the low functioning clients as expected, but the higher functioning clients continued to function

at a high level even while the counselor was functioning at a low level. The lower level clients, however, explored themselves at a significantly lower level during the second segment, while the counselor was functioning at a lower level, than they did during the first and third segments of the interview when the counselor was offering high conditions. It appeared then, that the lower functioning clients were, as predicted, more dependent upon the communications of the counselor than were the higher functioning clients. Thus, individual differences are apparently factors to be considered in responsiveness to level of therapeutic conditions offered.

In a follow up study, Piaget, Berenson, and Carkhuff (1967) attempted to replicate and elaborate on the Holder, Carkhuff, and Berenson (1967) study. Piaget, Berenson, and Carkhuff exposed four high- and four low-functioning clients to one high-functioning and one moderate-functioning counselor in a "clinical interview." The design of the study was counter-balanced with two high- and two low-functioning Ss seeing the high-functioning "therapist" first and the remaining four Ss seeing the moderate-functioning "therapist" first. The Ss were all seen by both "therapists" on the same day. During the first 15-minute segment of each interview the "therapists" offered high facilitive conditions of empathy, positive regard, genuineness, concreteness, and self-disclosure. During the middle 15-minute segment of the interview each "therapist" purposely lowered the levels of the facilitative conditions, and during the final 15-minute segment high facilitative conditions were purposely re-instated. The dependent variable was depth of self-exploration.

The results indicated that the depth of self-exploration by the low-functioning Ss was a function of the facilitative conditions offered. The depth of self-exploration by the high-functioning Ss, however, was independent of the facilitative conditions offered by the high-functioning "therapist." In addition, all Ss increased their level of self-exploration under the conditions offered by the high-functioning "therapist" while all Ss declined in level of self-exploration under the conditions offered by the moderate-functioning "therapist."

Finally, a study by Johnson (1971) examined the effects of three variables on the induction of cooperative behavior in listeners in a negotiation situation. The variables examined in the experiment were warmth of interaction, accuracy of understanding, and the proposal of compromises. Johnson (1971) noted that "Negotiation and the induction of cooperation are seen as crucial to success in several views of counseling" (p. 207). In this experiment confederates were trained to express warmth or coldness and to negotiate giving either complete and accurate statement of the S's position or to give an incomplete and inaccurate statement of the S's position. In addition, in half the conditions the confederates proposed a series of compromises while in the other half they did not propose any compromises. The confederates and Ss interacted in a series of negotiations, including role reversal by the confederate. The results indicated that the confederate's warmth toward the S resulted in favorable attitudes toward the confederate, that accuracy of understanding by the confederate lead to a reduction in

defensiveness and feelings of threat as well as an increase in willingness to reach an agreement in the Ss, and that more agreements were reached when the confederates proposed compromises than when they did not. In addition, Ss perceived more acceptance from members of the opposite sex than from members of the same sex, and female Ss reached more agreements than did male Ss. Johnson states that the results of the experiment:

> Demonstrate a causal relationship (a) between the expressed accuracy of understanding and the proposal of compromises and the induction of cooperation in a negotiation situation and (b) between the expressed warmth and the degree of favorableness of interpersonal attitudes (p. 215).

The primary implications of this study, then, are that the warmth expressed by a counselor toward the client and the accuracy of understanding of the client's verbalizations, etc., by the counselor are crucial for a positive counseling relationship which leads to behavior change by the client. In addition, if a compromise by the client is sought by the counselor, the counselor is more likely to be successful in effectuating the compromise if he proposes compromises than if he does not.

The studies summarized above thus provide empirical support for the wealth of correlational evidence concerning the desirable characteristics of counseling and psychotherapy relationships. The characteristics listed above do seem to be casually related to success in counseling and psychotherapy.

CHAPTER III

METHOD

Experiment I

Subjects

The Ss participating in experiment one were 40 freshmen college students at Simpson College who had not taken the Introduction to Psychology course, nor actively participated in any other study of opinions and attitudes conducted or in progress on the Simpson College campus. Simpson College is a Methodist related college of liberal arts with an enrollment of approximately 1,000 students located in Indianola, Iowa.

Procedure

The Ss were randomly selected from the 1969-70 freshman class with the exceptions as noted above. These Ss were randomly assigned to treatment groups with the exception that an equal number of male and females were assigned to each treatment group. In addition, a list of alternates was drawn in order to provide replacements for those Ss who did not wish to participate in the study. Five students elected to not participate and one S walked out of the first interview. These Ss were replaced with alternates.

The operant conditioner (hereafter referred to as CI) was a 23-year-old male senior psychology major who had just completed a course in Behavior Modification with honors and who had demonstrated proficiency in modifying behavior in an elementary school setting.

The Behavior Modification course was taught by the experimenter who used the text, Behavior Principles, written by C. B. Ferester and M. C. Perrott (1968) and the individual interview method outlined in the Introduction of this book. CI also received training and practice in verbal conditioning before the study was initiated. Training consisted of CI reading relevant material--both primary and secondary sources--and discussing it with the experimenter. Practice consisted of role playing, trial interviews designed to acquaint CI with the "interviewing situation," and actual practice in conditioning eight Ss (who were not included in the sample), one male and one female in each of the experimental conditions, and a co-analysis and critique of each of these sessions by CI and the experimenter. Considerable time was spent training CI to identify and reinforce opinion statements. CI received pay and academic credit for his duties. The academic credit was given for the lab portion of the second course in Experimental Psychology--a course taught by an instructor other than the experimenter. The grade CI received in this course was determined entirely by the instructor, so the problem of CI trying to please the experimenter was minimized. Also, the experimenter attempted to eliminate any biases or expectations that CI might have had which could have influenced the results of the study.

The Ss in the study were "interviewed" for 50 minutes per day and the sessions were held on consecutive days at approximately the same time each day and in the same room. The two sessions per S were broken down into four stages of 25 minutes each in all of the treatment groups.

The treatment groups were exposed to two treatments each; each lasted 25 minutes on an alternating basis:

1. Group One: Group one Ss were exposed to silence by CI for the first 25 minutes of each session and were given continuous reinforcement (as defined above) contingent upon the emission of opinion statements during the second 25 minutes of each session. During the silence stages CI remained silent and relatively passive except for giving the Ss his attention and emitting the prompts "Go ahead," and "Can you tell me more?" if the Ss did not emit a verbalization for a period of 30 seconds. In addition, CI gave noncommittal answers to most questions that were asked by the Ss. For example, if a S asked the question, "Do you think it's a nice day?" CI would answer, "Oh, I don't know, I guess so," or some other noncommittal answer while attempting to avoid the direct stimulation of further conversation. Direct questions that required an answer were answered if they did not pertain to the real purpose of the study. Evidence gathered by Azrin et al. (1961) indicated that Ss experiencing a complete lack of interaction in a verbal conditioning situation will terminate the interview within 10 minutes. There was thus a need for some interaction just to keep the Ss in the interview situation.
2. Group Two: Group two Ss were exposed to essentially the same conditions as the group one Ss with the exception that CI presented the reinforcers (as defined above) on an

individually predetermined random schedule of an average of one every 2 1/2 minutes during stages one and three. Each S in group two thus received 10 reinforcements during the random reinforcement stages. During these stages CI received a signal from the experimenter when it was time to administer each random reinforcement. This signal consisted of the experimenter (who was in another room) turning a light discrimination apparatus, located in a bookcase out of the S's field of vision and adjusted to a low intensity, for a period of 10 seconds. During the second and fourth stages, group two Ss received continuous reinforcement for the emission of opinion statements.

3. Group Three: Group three Ss were exposed to the silence condition during stages one and three. During stages two and four CI engaged the Ss in normal conversation (as defined above). Since there was no contingent reinforcement given for the emission of opinion statements, this group served essentially as a control group in order to provide information regarding the effects of familarity with CI upon the emission of opinion statements.

4. Group Four: Group four Ss were engaged in normal conversation during stages one and three and received continuous reinforcement contingent upon emission of opinion statements during stages two and four.

Prior to the beginning of the study all Ss received a letter (see Appendix A) signed by the experimenter and the Vice-President:

Dean of Academic Affairs asking their cooperation in participating in a study concerned with making the college experience more relevant to todays students and indicating that they would by contacted by telephone to arrange for an appointment with an interviewer. In addition, they were told that since the study was financed by a grant they would receive $2.00 per hour for their participation.

At the beginning of the first interview all Ss received the following instructions from CI:

> This study is designed to make the college experience more meaningful for you and for other college students. However, we are more interested in you as an individual rather than you as a member of the college society or society in general. You can say anything you want to, however, I won't be able to say much back to you or ask you any questions because I might bias what you would say to me. The interviews will be taped but the only person that will listen to the tapes will be someone from another college who will not know who you are. So, again, you can talk about anything you want to. You might want to begin by telling me a little bit about yourself. How are things going?

Questions pertaining to more specific purposes of the study were answered without giving any more information than was given in the above statement. In addition, if necessary the essence of the statement was repeated at the beginning of the second session. Usually, however, CI simply made the following statement at the beginning of the second session: "Well, you know the basic procedure. How are things going?"

All interviews were tape recorded on a Wollensak 3-M tape recorder. CI tabulated the number of opinion statements emitted during each stage by pressing foot switches located on the floor under the desk at which he sat and connected to impulse counters

(Lafayette Models 5707PS and 5822) located in a room two doors away from the experimental room. There were two switches and two counters one for each stage of the session. In addition, a graduate student from Drake University (who was not aware of the treatments being administered) listened to the tapes and counted the number of opinion statements and the number of non-opinion statements emitted during each 5-minute interval of each stage. The listener had received intensive training in identifying opinion statements according to the definition used in this study. This training consisted of discussions with the experimenter concerning what an opinion statement was and practice listening to tapes and identifying opinion and other statements. This training progressed until the experimenter was satisfied that the listener could reliably identify opinion statements according to the definition used in this study.

Accurate delimination of the response class of opinion statements proved to be difficult in the beginning of the training period. While some opinions were relatively easy to define, others were not. An example of a relatively clear opinion was the statement, "Indianola, Iowa, is a hick town." This can be distinguished from such statements as, "Some people feel that Indianola, Iowa, is a hick town," or "I have heard that Iowa is a rotten place to live!" These latter two statements are classifiable as facts or non-opinion statements, assuming that the S is not lying, while the former is clearly an indication of S's opinion of Indianola, Iowa, and a statement of the same. More difficult to identify were statements that were emitted rapidly and with or without conjunctions. An example might be the

following statement: "I feel that all negroes are inferior and it would be in the best interests of the United States to deport them to Africa." A compound sentence such as this was counted as two opinion statements; the first being, "I feel that all negroes are inferior," and the second, "It would be in the best interests of the United States to deport them to Africa." On the other hand, a statement such as, "All inferior negroes should be deported to Africa" would be counted as one opinion statement, while the statement, "Some people feel all negroes are inferior and should be deported to Africa" would be counted as a non-opinion statement.

All statements were recorded for each 5-minute interval of each stage by the listener in order to facilitate the graphic presentation of the data. A comparison of the total number of opinion statements tabulated by CI and those recorded by the listener was made in order to determine the degree of agreement between these two judges. The Pearson product-moment correlation between the number of opinion statements counted by CI and the listener was .98. Finally, another listener who was also unaware of the treatments being administered, listened to all tapes in order to count the number and types of verbalization emitted by CI during sessions with the different groups.

Experiment II

Subjects

The Ss participating in experiment two were 30 freshmen college students at Simpson College who were enrolled in the experimenter's

course entitled, Introduction to Psychology, during the fall semester of 1970. None of the Ss had participated in any other study of opinions and attitudes conducted or in progress at Simpson College, nor had they been exposed to written material or presentations on operant conditioning.

Procedure

The Ss were randomly selected from the freshmen enrolled in the experimenter's Introduction to Psychology course. These Ss were randomly assigned to treatment groups with the exception that an equal number of males and females were assigned to each treatment group. Students that were unable to participate or did not wish to participate were replaced with alternates drawn from the remaining freshmen in the class. Ss received 20 points toward their final course grade for participating provided that they completed two "interviews."

The operant conditioner (hereafter referred to as CII) was a 29-year-old male senior psychology major who had completed the experimenter's course in Behavior Modifications with the grade of A. CII received approximately the same training and practice in verbal conditioning as CI did before experiment one was conducted. The only difference was the CII was required to condition 12 practice subjects before the experimenter was satisfied that CII was able to function appropriately in the conditioning sessions. The major difficulties in training CII were concerned with rapid identification of opinion and non-opinion statements, and the achievement of proper inflection of voice in administering the "mm-hmm" type of

verbal reinforcement. CII received academic credit for his duties. The academic credit was given for the lab portion of the second course in Experimental Psychology--a course taught by an instructor other than the experimenter. The grade CII received for his project was determined entirely by the instructor of the course, so the problem of CII trying to please the experimenter was minimized. Also, the experimenter attempted to eliminate any biases or expectations that CII might have had which could have influenced the results of experiment two.

The Ss were "interviewed" individually for two sessions each. Each S was "interviewed" for 50 minutes per day and the sessions were held on consecutive days at approximately the same time and in the same room as was used in experiment one. As in experiment one, the two sessions were broken down into four stages of 25 minutes each in all the treatment groups.

The Ss in each treatment group were exposed to two treatments each which lasted for 25 minutes on an alternating basis:

1. Group One: Group one Ss were exposed to random reinforcement on an individually predtermined random schedule of an average of one reinforcement every 2 1/2 minutes during stages one and three. During the second and fourth stages Ss in group one received reinforcements contingent upon the emission of opinion statements on a variable interval schedule of 2 1/2 minutes. Thus, each S in group one could receive 10 reinforcements during each 25-minute stage. During all stages CII received a signal from the experimenter

when it was time to administer each reinforcement. As in experiment one, the signal was the illumination of a light in a light discrimination apparatus operated by the experimenter from another room.

2. Group Two: Group two Ss were exposed to random reinforcement during stages one and three. During stages two and four they received continuous reinforcement contingent upon the emission of opinion statements.
3. Group Three: Group three Ss received reinforcement for statements other than opinion statements on a variable interval schedule of 2 1/2 minutes during stages one and three. During stages two and four they received reinforcement contingent upon the emission of opinion statements. This reinforcement was delivered on a variable interval schedule of 2 1/2 minutes.

During the second class meeting of the semester all members of the experimenter's Introduction to Psychology class were asked to fill out a card answering certain questions about themselves including their year in school. These cards were examined and those of freshmen were numbered and placed in a group. The numbers were then drawn and randomly assigned to treatment groups, a group of alternates, and a practice group. Prior to the beginning of the study (and during the second week of classes) the experimenter read the following statement to the class

> This semester I am conducting a study designed to make the college experience more meaningful. During this course I will ask many of you to participate in this study. Participation will consist of interacting in two one-hour long interviews with an interviewer for which you may receive 20 points to be applied toward your final grade providing you come to both interviews. Participation is not required but if you do participate you must come to both interviews in order to receive credit. In addition, to receiving 20 points, I think you will find participation to be a meaningful and pleasant experience. Those selected will be selected by means of a statistical technique designed to provide adequate representation. The interviews will begin next week so I will be contacting you in the near future. If you do not want to participate please inform me immediately.

The essence of the statement was repeated during the next three class periods in order to provide information to any student who might have missed prior statements. Questions pertaining to more specific purposes of the study were answered without giving any more information than was given in the statement. The question of unfairness to those who were not selected was answered with the statement that, "I would think about it and we will work something out later." Actually, those not selected were allowed to do extra credit work after the data had been gathered. Two freshmen expressed a desire not to participate so they were eliminated from the sample and replaced with alternates. Also, one freshman withdrew from school and one freshman was severely injured in an automobile accident and could not participate. They were also replaced with alternates. In addition, two Ss walked out of the interview and the tape recorder malfunctioned during one interview necessitating the elimination of another S. These Ss were also replaced with alternates.

CII's behavior during all sessions was essentially the same as the CI's behavior during experiment one with the exception that there were no normal conversation or silence stages in experiment

two. CII remained silent and relatively passive during all stages except when administering reinforcements or giving prompts if the Ss did not emit a verbalization for a period of 30 seconds. CII also gave each S his attention and answered questions in a noncommittal fashion. Direct questions that required an answer were answered if they did not pertain to the real purpose of this study.

At the beginning of the first interview all Ss received the following instructions from CII:

> This study is designed to make the college experience more meaningful for you and for other college students. However, we are more interested in you as an individual rather than you as a member of the college society or society in general. You can say anything you want to, however, I won't be able to say much back to you or ask any questions because I might bias what you would say to me. The interviews will be taped but the only person who will listen to the tapes will be someone who will not know who you are. So, again you can talk about anything you want to. Perhaps you might like to begin by telling me a little bit about yourself. How are things going?

Questions pertaining to more specific purposes were answered without giving any more information than was given in the above statement. In addition, if necessary the essence of the statement was repeated at the beginning of the second session. Usually, however, CII simply made the following statement at the beginning of the second session: "Well, you know the basic procedure. How are things going?"

All interviews were taped and CII recorded the opinion statements as they occurred using the same apparatus as was used in experiment one. In addition, an undergraduate psychology major (who was unaware of the procedure and the purpose of the study) listened to the tapes and counted the number of opinion and other

statements emitted during each 5-minute interval of each stage. The listener received intensive training in identifying opinion statements according to the definition given above. A comparison of the number of opinion statements tabulated by CII and the listener was made with a resulting Pearson r of .98. Finally, the listener listened to the tapes a second time in order to determine the number and types of verbalizations emitted by CII during all treatment sessions.

CHAPTER IV

RESULTS

Experiment I

The conditioning of opinion statements

All data used in the analysis of experiment one were data tallied by the listeners. These raw data are presented in Appendix B.

Table 1 presents an analysis of variance of the mean number of opinion statements emitted during each stage by each group in experiment one. The mean number of opinion statements emitted in each stage by each treatment group is presented graphically in Figure 1 and in Appendix D.

Table 1. Analysis of variance of differences in mean number of opinion statements emitted during each stage by each group in experiment one

Source	df	MS	F	
Total	159			
Sex	1	3294.225	.760	NS
Group	3	30361.158	7.003	.01
Sex x Group	3	2979.492	0.687	NS
Error (a)	32	4335.597		
Stage	3	9830.092	23.267	.01
Sex x Stage	3	284.292	0.673	NS
Group x Stage	9	4380.781	10.369	.01
Sex x Group x Stage	9	585.714	1.386	NS
Error (b)	96	422.489		

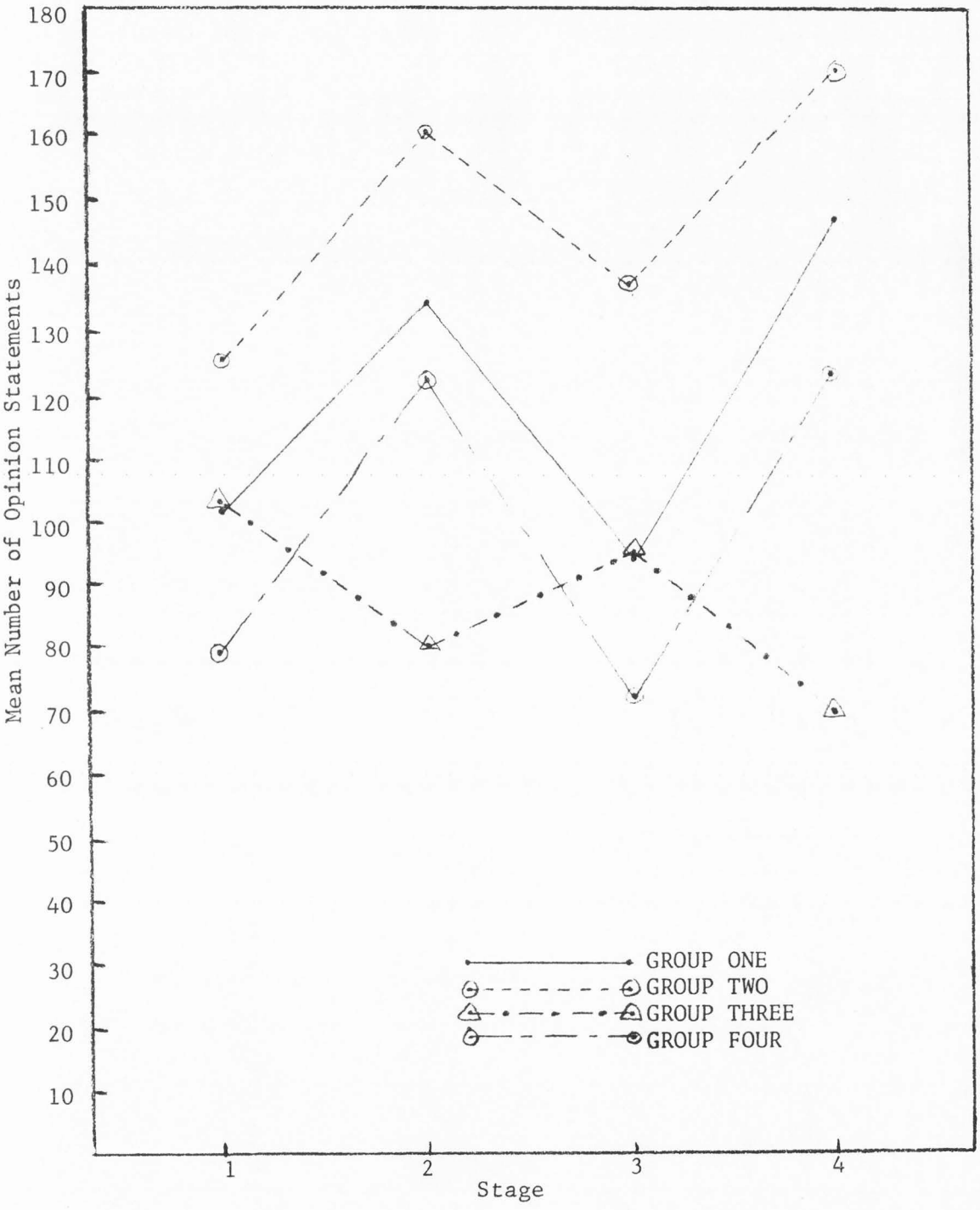

Figure 1. Mean number of opinion statements emitted in each stage by each group in experiment one.

The analysis of variance indicated that there were significant differences in the group effects, the stage effects, and the group x stage interaction. No significance was found for the sex effect, the sex x group interaction, the sex x stage interaction, or the sex x group x stage interaction.

Application of the Least Significant Difference (LSD) method (Snedecor and Cochran, 1967) revealed that group two subjects who received random reinforcement during stages one and three emitted significantly more opinion statements than groups one (LSD value = 30.0, $p < .05$), three and four (LSD value = 44.4, $p < .005$). In addition, group one subjects emitted significantly more opinion statements than group three subjects (LSD value = 30.0, $p < .05$).

Groups one, two, and four also showed a significant (LSD value = 13.2, $p < .005$) increase in number of opinion statements emitted from stages one to two and from stage three to stage four indicating that conditioning of opinion statements had occurred in these groups. Group three subjects, however, did not show an increase in opinion statements from stage one to stage two or from stage three to stage four indicating that no conditioning of opinion statements occurred in group three. An analysis of covariance applied to the gain in opinion statements from the baseline to the reinforcement stages of groups one, two, and four revealed no significant differences ($F = .52$, $p > .05$) in gain scores for these groups.

Examination of the data indicated that in the group x stage interaction groups one, two, and four showed an increase in number of opinion statements emitted from stage one to stage two and from

stage three to stage four while group three S's showed a decrease in number of opinion statements emitted from stage one to stage two and from stage three to stage four. The major factor in the group x stage interaction thus appears to be the decrease in number of opinion statements emitted during stages two and four by group three S's.

The mean number of opinion statements emitted during each 5-minute interval of time in each group is presented graphically in Figure 2. The graphic data for group one shows a decrease in number of opinion statements emitted during stage one under the non-reinforcement (silence) condition, an increase in number of opinion statements emitted during the continuous reinforcement condition of stage two, a leveling off of number of opinion statements emitted during stage three, and an irregular, but high number of opinion statements emitted during the continuous reinforcement condition of stage four. Group two shows a slight decrease in number of opinion statements emitted during stage one under random reinforcement conditions, a relatively high number of opinion statements emitted during the contingent reinforcement condition of stage two, another decrease during stage three, and a very high but irregular number of opinion statements emitted during stage four. The graphic data for group three indicates a decrease in number of opinion statements during the silence condition of stage one, an irregular but lower number during the normal conversation condition of stage two, a leveling off during stage three and a lower but relatively stable rate during stage four. Group four shows an irregular but

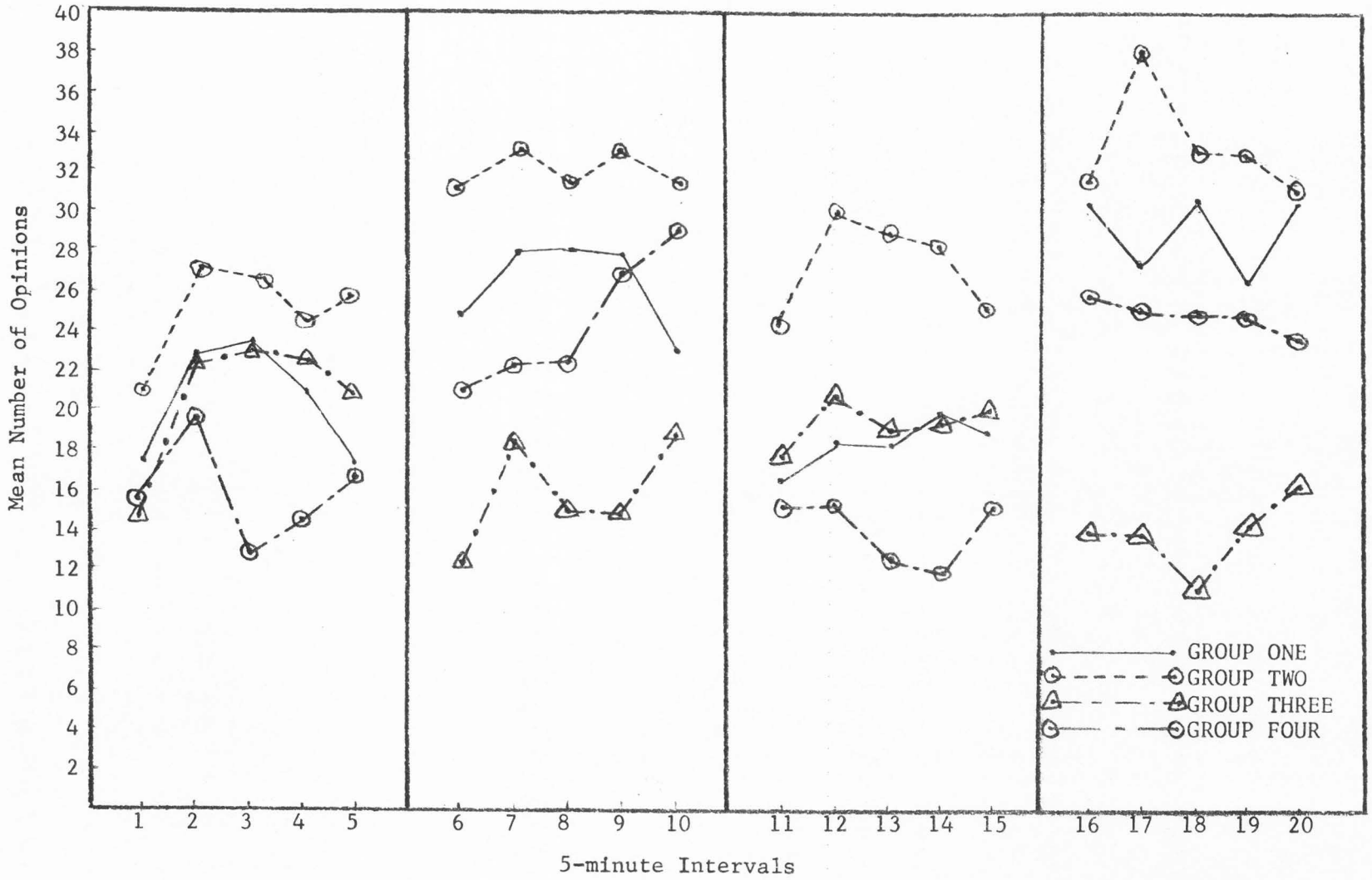

Figure 2. Mean number of opinion statements emitted during each 5-minute interval of time by each group in experiment one.

relatively low rate of emission of opinion statements during the normal conversation condition of stage one, a definite increase in the rate of emission of opinion statements during the contingent reinforcement condition of stage two, a lower number during the normal conversation condition of stage three, and a higher stable rate during the continuous reinforcement conditions of stage four.

The emission of non-opinion statements

Of importance is the question of whether the reinforcement conditions were effective in increasing the rate of emission of opinion statements per se or whether the increase in number of opinion statements in groups one, two, and four during the reinforcement stages was due to a reinforcing effect operating on all verbalizations emitted by the subjects during these stages.

Figure 3 presents the mean number of other (non-opinion) statements emitted during each stage by each treatment group. These data are presented in table form in Appendix E.

An analysis of variance of statements other than opinion statements emitted during each stage by the different treatment groups is summarized in Table 2.

The only significant difference to appear was in the stage effects. There were no significant differences in the sex effects, the group effects, the sex x group interaction, the sex x stage interaction, the group x stage interaction, nor the sex x group x stage interaction. The sex x stage and the group x stage interactions, however, approached significance. Application of the LSD (Snedecor and Cochran, 1967) method revealed that the significant stage effect (LSD value = 17.28,

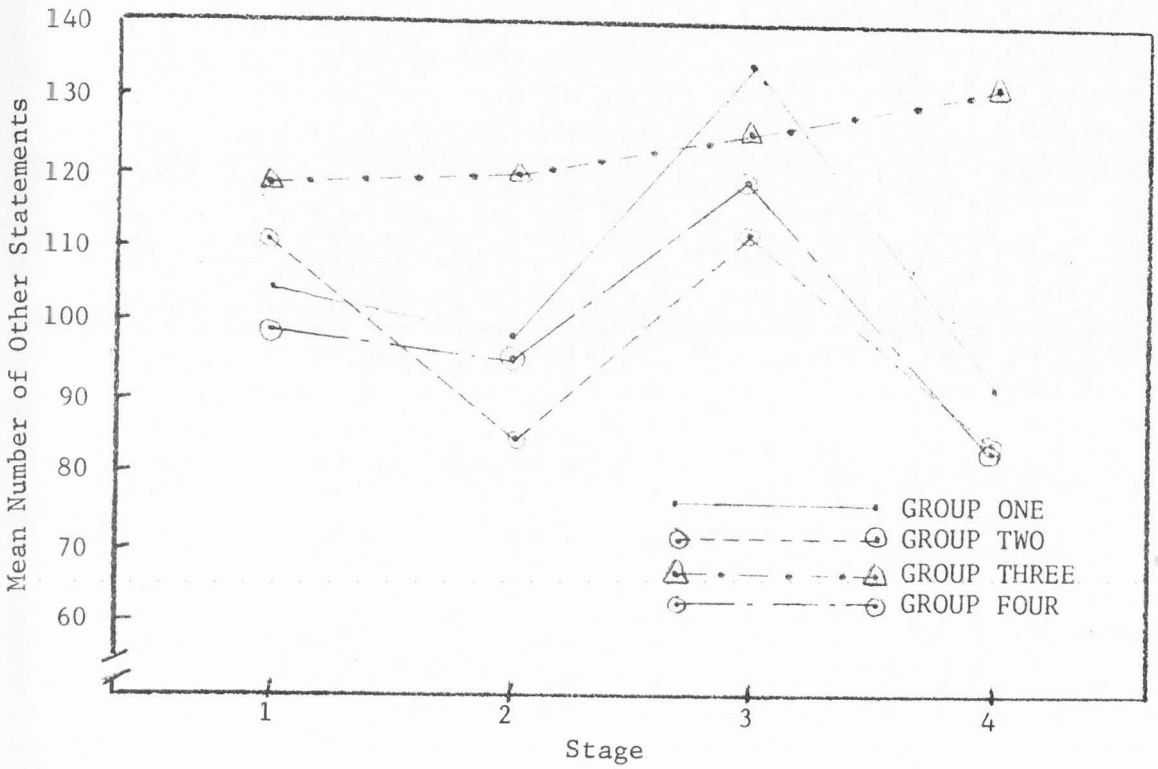

Figure 3. Mean number of non-opinion statements emitted during each stage by each group in experiment one.

Table 2. Analysis of variance of mean number of non-opinion statements emitted during each stage by each group in experiment one

Source	df	MS	F	
Total	159			
Sex	1	3686.40	.456	NS
Group	3	4383.15	.542	NS
Sex x Group	3	7795.05	.963	NS
Error (a)	32	8092.96		
Stage	3	4364.42	2.879	.05
Sex x Stage	3	2666.52	1.759	NS
Group x Stage	9	1843.91	1.217	NS
Sex x Group x Stage	9	531.30	.351	NS
Error (b)	96	1515.693		

$p < .05$) occurred between the stages three and four. Subjects emitted significantly fewer other statements during stage four than during stage three.

The operant conditioner's behavior

The verbal behaviors of CI were tallied by a listener who was unaware of the purpose of the study and the treatments administered to the different groups. The purpose of listening to CI's verbalizations was to identify the effects, if any, of his verbalizations (other than reinforcements) on the verbalizations of the subjects in each group.

Examinations of the data revealed that CI emitted significantly ($\chi^2 = 221$, 3 df, $p < .01$) more verbalizations while interacting with subjects in the groups where normal conversation was used than in interacting with the remaining groups. As might be expected, CI emitted significantly ($\chi^2 = 110.2$, 1 df, $p < .01$) more sentences during the normal conversation stages with groups three and four than during the other stages with these groups. In addition, CI emitted significantly ($\chi^2 = 44.7$, 1 df, $p < .05$) more sentences during the normal conversation stages with group three than the corresponding stages with group four.

The effects of CI's non-reinforcing verbalizations on the total (opinions and non-opinion combined) verbalizations of the different groups are somewhat difficult to ascertain. The χ^2 test indicated that there was a significant ($\chi^2 = 23.68$, 3 df, $p < .01$) difference in the number of verbalizations emitted by the different groups. Group two which received random reinforcement during stages one and three, emitted the most verbalizations. This group emitted significantly

more verbalizations than group three (χ^2 = 10.6, 1 df, $p < .01$) and group four (χ^2 = 21, 1 df, $p < .01$). The difference in number of verbalizations emitted by groups one and two, however, was not significant (χ^2 = 3.04, 1 df, $p > .05$). In addition, group one emitted significantly (χ^2 = 8.10, 1 df, $p < .01$) more verbalizations than group four, but the difference in number verbalizations emitted by groups one and three was not significant (χ^2 = 2.34, 1 df, $p > .05$). The number of total verbalizations emitted by subjects in groups three and four did not differ significantly (χ^2 = 1.74, 1 df, $p > .05$). Apparently the fact that CI emitted more sentences while interacting with group three subjects than group four subjects had no effect on the total number of verbalizations emitted by group three subjects. The significant increase in number of opinion statements by group four subjects thus, can apparently be attributed to the continuous reinforcement conditions experienced by this group.

Experiment II

As in experiment one, all data used in the analysis of experiment two were data tallied by the listener. The raw data tallied during experiment two are presented in Appendix C.

Figure 4 graphically presents the mean number of opinion statements emitted in each stage by each treatment group in experiment two. These data are presented in table form in Appendix F.

An analysis of variance of these data is summarized in Table 3. Significant differences occurred in the stage effects, the sex x group interaction, and the group x stage interaction. There were no

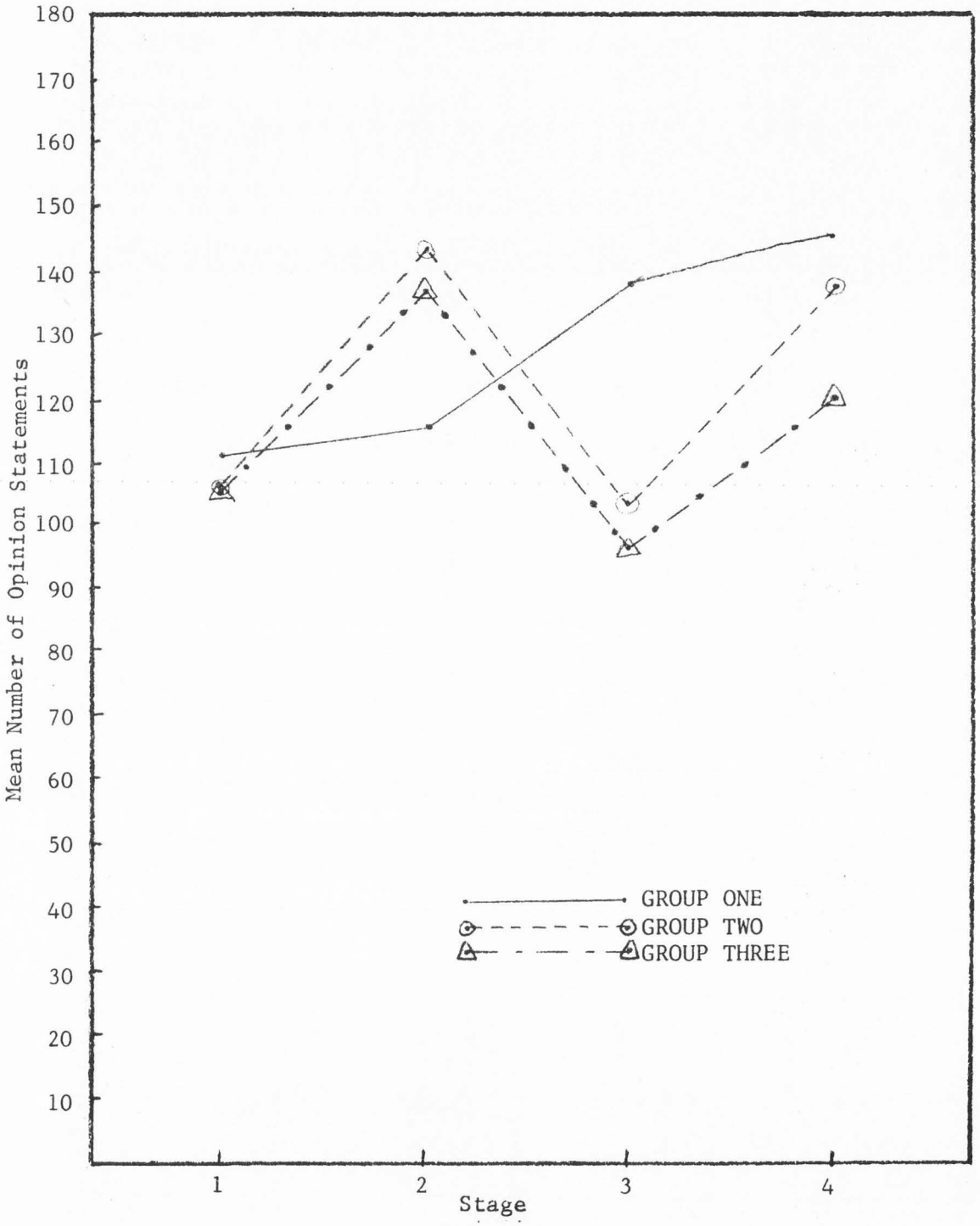

Figure 4. Mean number of opinion statements emitted during each stage by each group in experiment two.

Table 3. Analysis of variance of mean number of opinion statements emitted during each stage by each group in experiment two

Source	df	MS	F	
Total	119			
Sex	1	3.333	.001	NS
Group	2	1647.300	.723	NS
Sex x Group	2	8479.633	3.722	.05
Error (a)	24	2278.171		
Stages	3	5018.200	7.402	.01
Sex x Stage	3	509.579	.752	NS
Group x Stage	6	2467.400	3.639	.01
Sex x Group x Stage	6	961.510	1.418	NS
Error (b)	72	677.954		

significant differences in the sex effects, the group effects, the sex x stage interaction, or the sex x group x stage interaction.

Application of the LSD (Snedecor and Cochran, 1967) method revealed that groups two and three showed significant (LSD value = 19.5, $p < .005$) increases in number of opinion statements from stage one to stage two and from stage three to stage four indicating that conditioning had occurred under the reinforcement conditions in these groups. Group one data indicated that there was no significant differences betweens stages one and two and stages three and four. There was thus no significant conditioning under the random-variable interval condition of group one.

Examination of the data revealed that the sex x group interaction could be accounted for by the fact that males of group one emitted more opinion statements during stages three (M diff. = 63.8) and four (M diff. = 38) and the fact that females in group three emitted more opinion statements during stages two (M diff. = 43.6)

and three (M diff. = 39.6) than members of the opposite sex in the corresponding groups and stages.

The group x stage interaction lends further support to the contention that conditioning occurred during stages two and four in groups two and three. S's in groups two and three showed a significant increase in number of opinion statements emitted from stage one to stage two and from stage three to stage four while the increase for group one S's during these stages was nonsignificant. Also, group one Ss emitted more opinion statements during stage three than group two Ss (M diff. = 35.4) and group three Ss (M diff. = 42.1). In addition, group one Ss emitted fewer opinion statements during stage two than did group two Ss (M diff. = 36.7) or group three Ss (M diff. = 20.9). Also, group one Ss emitted noticably more opinion statements than group three Ss (M diff. = 25.5) during stage four, but because of the high mean number of opinion statements emitted by group one Ss during stage three it cannot be said that conditioning occurred in stage four for these Ss.

These results, then indicate that significant increases in the number of opinion statements occurred under the reinforcement conditions in groups two and three. The reinforcement seemed to be the most effective under the contingent reinforcement conditions of group two.

The greatest conditioning effects occurred with females in group three during the first session while the least effect was observed with males of group one during both sessions and females of group three during the second session.

The mean number of opinion statements emitted during each 5-minute interval of time in each group in experiment two is presented in

Figure 5. The graphic data for group one shows an increase with a leveling off during stage one, a slight increase during stage two, a higher relatively stable rate during stage three, and an irregular comparable rate during stage four. Group two data show an increase during stage one, a higher increasing rate during stage two under continuous reinforcement, a lower decreasing rate during stage three under random reinforcement and a higher increasing rate during the continuous reinforcement condition of stage four. Group three data show an initial increase followed by a decrease during stage one, a stable rate with a marked increase in rate during the final 5-minutes of stage two, a lower decreasing rate during stage three, and a marked increase in rate during the final stage.

The emission of non-opinion statements

Figure 6 presents the mean number of other statements emitted during each stage for each group in experiment two. These data are presented in table form in Appendix G.

An analysis of variance of statements other than opinion statements emitted during each stage by the different treatment groups is presented in Table 4. This analysis revealed significant differences in sex effects, group effects, and the group x stage interaction. No significant differences were found in the stage effect, the sex x group interaction, the sex x stage interaction, or the sex x group x stage interaction.

Application of the LSD technique revealed that females emitted significantly ($p < .05$) more other statements than did males. This occurred during each stage of all groups. Also the LSD test indicated

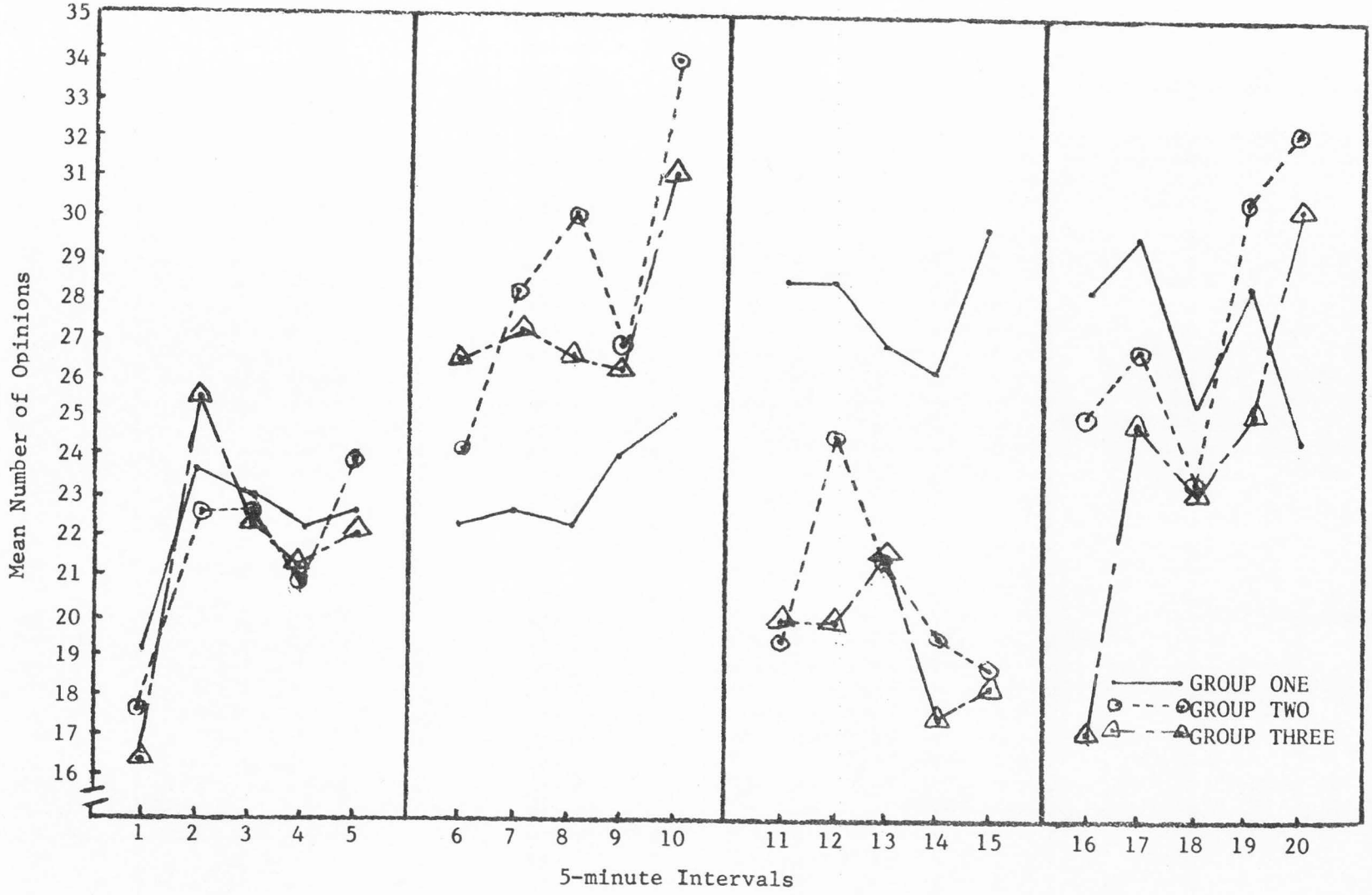

Figure 5. Mean number of opinion statements emitted during each 5-minute interval of time be each group in experiment two.

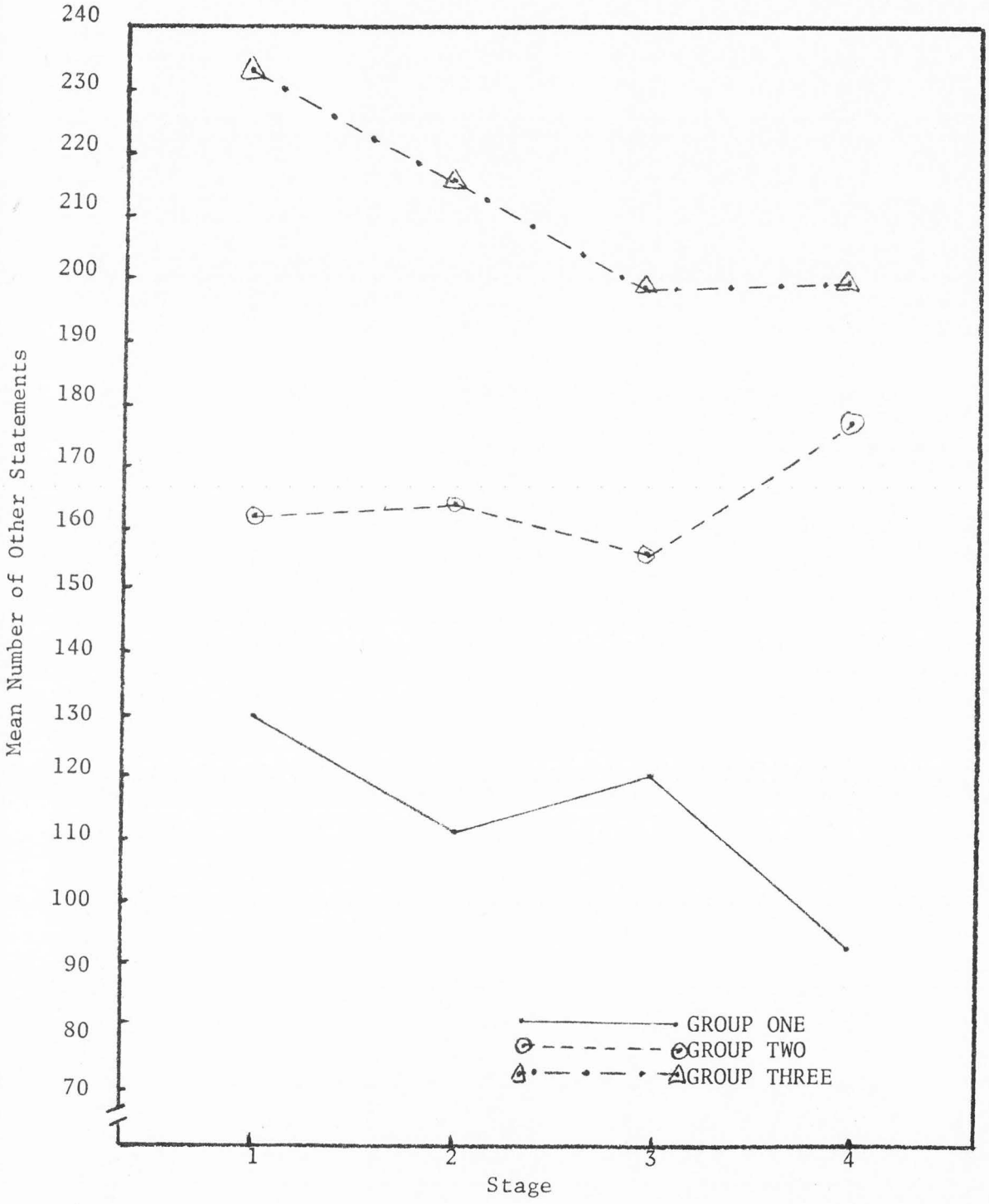

Figure 6. Mean number of non-opinion statements emitted during each stage by each group in experiment two.

Table 4. Analysis of variance of mean number of non-opinion statements emitted during each stage by each group in experiment two

Source	df	MS	F	
Total	119			
Sex	1	75,751.875	5.421	.05
Group	2	96,367.658	6.896	.005
Sex x Group	2	1,282.725	.092	NS
Error (a)	24	13,973.754		
Stages	3	2,058.542	2.433	NS
Sex x Stages	3	301.675	.357	NS
Group x Stage	6	2,063.358	2.439	.05
Sex x Group x Stage	6	1,325,358	1.566	NS
Error (b)	72	846.115		

that group three subjects emitted significantly ($p < .005$) more other statements than group one subjects. The difference between group two and group three approached significance. That group three emitted a high number of other statements is not totally unexpected since group three subjects were reinforced for other statements on a variable interval schedule during stages one and three.

The group x stage interaction appears to be most relevant. Group one subjects showed a decrease from stage one to stage two (M diff. = -19.1) and from stage three to stage four (M diff. = -26.3). Group three subjects also showed a decrease from stage one to stage two (M diff. = -16.7), which is expected, but no real difference between stages three and four (M diff. = -1.6). Group two subjects showed a small increase from stage one to stage two (M diff. = 1.9) but a rather large and unexpected increase from stage three to stage four (M diff. = 24.5). The increase in non-opinion statements from stage three to stage four in group two is comparable to the increase in

opinion statements (M diff. = 33.7) from stage three to stage four for this group.

Figure 7 presents a comparison of the mean number of opinion and non-opinion statements emitted during each 5-minute interval for group two of experiment two. Examination of the graphic data in Figure 7 reveals that with the exception of stage one there is a close correspondence between the rate of emission of opinion statements and other statements in group two. This unexpected correspondence suggests that it is not possible to infer that only opinion statements were being conditioned.

The operant conditioner's behavior

The verbal behaviors of CI were assessed by the listener who listened to all tapes used in experiment two a second time.

A comparison of the number of reinforcements administered in all the conditions excepting the continuous reinforcement condition revealed that there were no significant differences in number of reinforcements administered during these conditions (χ^2 = .12, 4 df $p > .05$). Thus, there were an equal number of reinforcements administered in the random reinforcement stages, the VI stages where opinion statements were reinforced, and the VI stages where other statements were reinforced.

Examination of the data pertaining to the random reinforcement stages of groups one revealed that in group one the random reinforcements followed opinion statements 61 percent of the time while the reinforcements followed non-opinion statements 39 percent of the time.

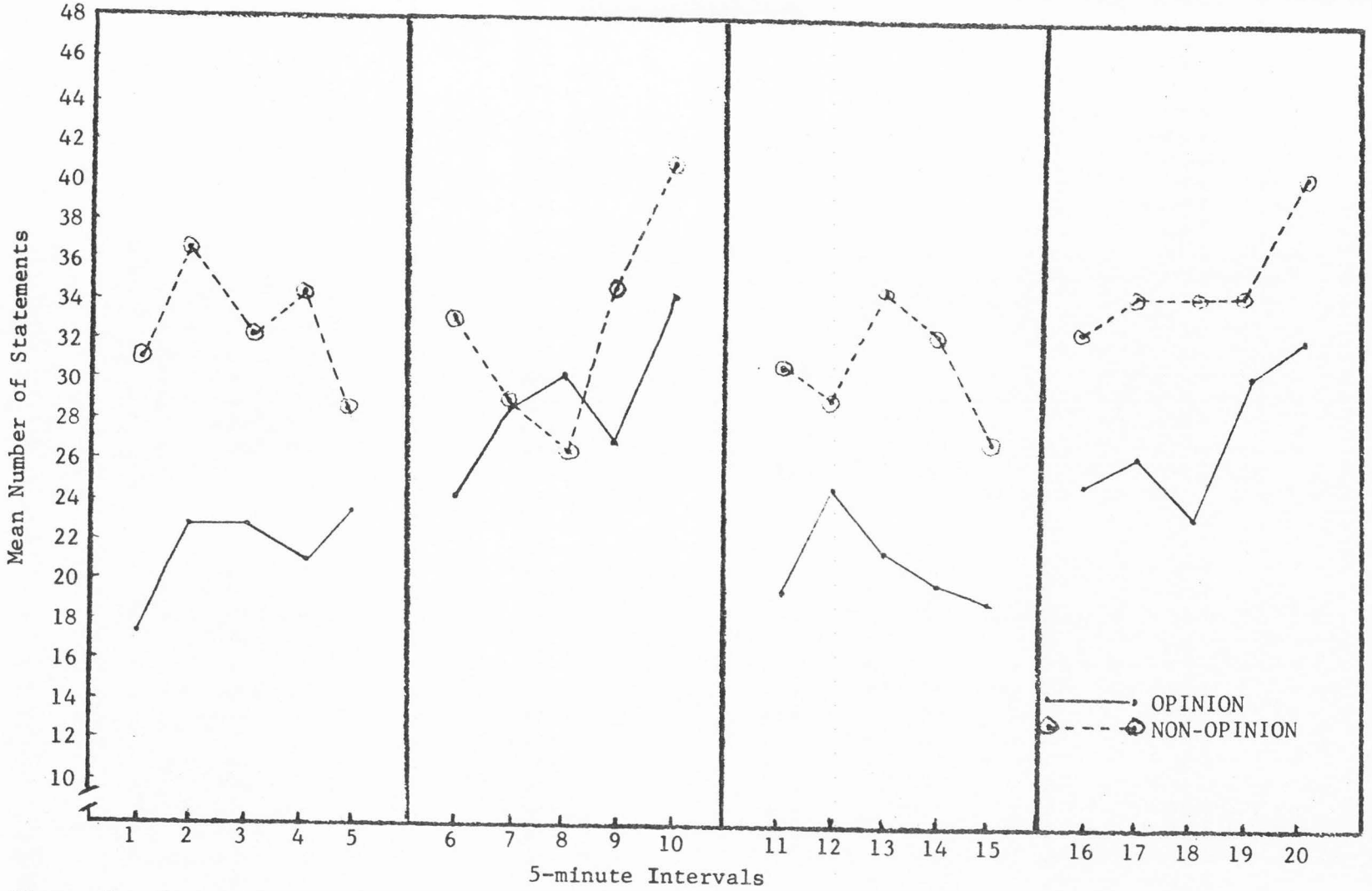

Figure 7. Comparison of mean number of opinion statements and non-opinion statements emitted during each 5-minute interval for group two.

A χ^2 test with a correct for percentages (Garrett, 1958) indicated that this difference was not significant ($\chi^2 = 2.448$, df = 1, $p > .05$). The difference however, approached significance at the .10 level. The difference in percentage of reinforcements following opinion statements and non-opinion statements during the random reinforcement stages of group two was also non-significant ($\chi^2 = 0.43$, 1 df, $p > .05$). For group two 55.8 percent of the reinforcements followed opinion statements while 44.2 percent of the reinforcements followed non-opinion or other statements.

In addition, the number of incorrect reinforcements administered (reinforcements following other statements and reinforcements administered during non-opinion statements) was tallied for each group during stages two and four--stages where only opinion statements were to be reinforced. These data revealed that there was a mean numberof 2.2 incorrect reinforcements during stages two and four (combined) administered to group one, a mean of 11.7 incorrect reinforcements administered during stages two and four to group two, and a mean of 1.7 incorrect reinforcements administered to group three subjects during stages two and four. Application of χ^2 test revealed these differences to be significant ($\chi^2 = 12.00$, df = 2, $p < .01$). Thus, the data indicate that there were significantly more incorrect reinforcements administered to group two subjects during stages two and four than to the other groups during the corresponding stages.

Finally, the number of reinforcements missed (not administered) during stages two and four for group two were tallied. The results indicate that a total of 665 reinforcements were not administered

under the planned condition of continuous reinforcement of opinion statements. Thus, a mean of 33.2 reinforcements per stage were missed during stages two and four each for group two subjects. This amounts to 23.6 percent of the reinforcements being missed during these stages. The percentage of reinforcements missed and incorrect reinforcements given is 27.8 percent, indicating that during the continuous reinforcement stages only a little less than three quarters of the reinforcements were administered appropriately.

The Research Questions

Research question number one

Research question number one was stated as follows: Is it possible to systematically condition opinion statements in a verbal conditioning situation that resembles a counseling interview?

The results of experiments one and two indicate that it is possible to condition opinion statements in the "interview" situation as described above. The data presented in Figure 1 clearly indicate that conditioning of opinion statements occurred under the continuous reinforcement conditions of group one, two, and four in experiment one. No conditioning occurred in the control condition of group three. The significant increases in numbers of opinion statements emitted under the reinforcement conditions and the lack of a significant increase under the control condition thus indicate that it is possible to systematically condition opinion statements in the "interview" situation as employed in experiment one.

The LSD test indicated that while there were no significant differences in the group effects in experiment two, the stage effects were highly significant. Application of the LSD test to the data as presented in Figure 4 indicated that there were significant increases in the number of opinion statements emitted under the reinforcement conditions of groups two and three. The evidence thus indicates that opinion statements were conditioned in the "interviews" in groups two and three. No significant conditioning, however, occurred under the treatment conditions administered to group one in experiment two.

Centers (1963) indicated that approximately one-fourth of the Ss in his study failed to show an increase in emission of opinion statements during the reinforcement condition. In experiment one of the present study only two Ss failed to show an increase in emission of opinion statements under the continuous reinforcement conditions. These two Ss were both in group two which received random reinforcement during stages one and three. In both cases each S failed to show an increase under the reinforcement condition of one stage but under the reinforcement condition of the other stage each did show an increase in emission of opinion statements. Thus, in experiment one only one-thirtieth of the observations failed to confirm at least some conditioning. In experiment two, however, fifteen of 60 observations failed to confirm an increase in emission of opinion statements during the reinforcement conditions. This amounts to one-fourth of the observations failing to confirm conditioning--a figure comparable to that of Centers (1963). It is important to note, however, that 10 of these observations were of group one subjects who

received random reinforcement during stages one and three and variable interval reinforcement during stages two and four. As noted above the random reinforcements followed opinion statements 61 percent of the time in group one while the reinforcements followed non-opinion statements only 39 percent of the time. Finally, there were three observations that failed to confirm conditioning in group two and two observations in group three that failed to indicate an increase in opinion statements under the appropriate reinforcement conditions.

The results of the two experiments in the present investigation thus strongly suggest that it is possible to systematically condition opinion statements in an "interview" situation as defined above providing that the reinforcements are continuous (or approximately so) or when non-opinion statements are reinforced during the baseline and opinion statements are reinforced during the reinforcement condition per se. When there are an equal number of reinforcements administered during all stages, and those administered during the baseline are random, the results suggest that no systematic conditioning of opinion statements will occur.

Research question number two

Research question number two was stated as follows: Does the behavior of the operant conditioner during the baseline have any influence on subsequent conditioning of opinion statements in a verbal conditioning situation resembling a counseling interview?

The results of experiments one and two indicate that it is possible under certain conditions to systematically condition opinion statements in an "interview" situation. The data indicate that group

four Ss showed the largest increase (M = 48.25) from baseline and return to baseline conditions to the reinforcement conditions. Group four Ss experienced normal conversation followed by continuous reinforcement for the emission of opinion statements. The next largest increase (M = 41) was shown by group one Ss who experienced silence during the baseline and return to baseline conditions followed by continuous reinforcement for the emission of opinion statements while group two Ss, the random reinforcement--continuous reinforcement group, showed a smaller increase (M = 34.55) under the reinforcement conditions in experiment one. In experiment two the largest increase (M = 34.25) was shown by group two Ss who experienced random reinforcement followed by continuous reinforcement for the emission of opinion statements. Worthy of note is the near equality of increase in mean number of opinion statements emitted by group two of experiment one and group two of experiment two. Both of these groups received identical treatments. The next largest increase (M = 26.7) in experiment two was shown by group three which was reinforced for the emission of opinion statements during stages two and four. Finally a small but non-significant increase (M = 6.0) was shown by group one Ss during the reinforcement conditions.

The slight differences between the mean gain scores for groups one, two, and four of experiment one are not significant when variability in baseline performance is accounted for. Thus, it is not possible to infer that the baseline behavior of the operant conditioner has an influence on subsequent conditioning of opinion statements when gain scores are considered. The gain in number of opinion statements that

occurred thus seemed to be a function of the reinforcements per se rather than of the baseline behavior of the operant conditioner.

If, on the other hand, one is interested in the total number of opinion statements emitted during the reinforcement stages, the data indicates that group two Ss who received random reinforcement during stages one and three emitted significantly more opinion statements under continuous reinforcement conditions than any other group in experiment one. The difference in total number of opinion statements emitted under reinforcement conditions by groups one and four, however, was not significant. Thus, random reinforcement followed by continuous reinforcement seems to be the most effective treatment to use when one is interested in achieving the highest total number of opinion statements under reinforcement conditions.

The answer to research question number two thus is a qualified no. When mean gain in number of opinion statements is considered, the baseline behavior of the operant conditioner seems not to be a significant variable. When, however, the total number of opinion statements is considered, conditioning seems to be most effective when preceeded by random reinforcement.

Research question number three

Research question number three was stated as follows: Is there a difference in the number of opinion statements emitted in a verbal conditioning situation resembling a counseling interview for males and females?

The results of experiments one and two indicated that the sex of the S was not a significant variable influencing the conditioning of

opinion statements in the "interview" situation as it was employed in the present study. There was no significant difference in the number of opinion statements emitted by males and females in either experiment.

Research question number four

Research question number four was stated as follows: Is there any interaction between the baseline behavior of the operant conditioner, the sex of the subject and the stage of treatment in the conditioning of opinion statements?

Examination of the analysis of the data from experiment one revealed a significant group x stage interaction. This data revealed that this interaction could be accounted for by the fact that groups one, two, and four showed a significant increase in number of opinion statements emitted from stage one to stage two and from stage three to stage four, while group three Ss showed a decrease under these conditions. Conditioning thus occurred under the reinforcement conditions for groups one, two, and four while group three Ss actually showed a decrease in number of opinion statements emitted during stages two and four.

The analysis of the data from experiment two indicated also a significant group x stage interaction with groups two and three showing a significant increase in emission of opinion statements emitted under reinforcement conditions while group one Ss failed to show a significant increase. Also, group one subjects emitted more opinion statements during stages three and four than did any of the other groups. Group one Ss also emitted fewer opinion statements during stage two than did the other groups during this stage.

There was no significant influence of sex of the subject on the conditioning of opinion statements during experiment one. The data for experiment two, however, do indicate a significant sex x group interaction. These data indicate that males of group one emitted more opinion statements than the females of this group. The difference was particularly noticable during stages three (M diff. = 63.8) and four (M diff. = 38). Females in group three, on the other hand, emitted more opinion statements than males of this group. This difference was the greatest during stages two (M diff. = 43.6) and three (M diff. = 39.6).

In addition, the female Ss of group one showed an increase (M = 19.2) in number of opinion statements emitted from stage three to stage four while the male Ss showed a decrease (M = -6.6) in number of opinion statements emitted during these stages. Group three females also showed a large increase (M = 45.6) in opinion statements emitted during stage two as comapred to stage one. Males on the other hand, showed a large increase (M = 37.6) in number of opinion statements emitted during stage four as compared to stage three. Apparently the variable interval reinforcement following reinforcement of other statements was more effective for females during the first "interview" while the reverse was true for male Ss of group three.

CHAPTER V

DISCUSSION

The Research Questions

Research question number one

Research question number one was stated as follows: Is it possible to systematically condition opinion statements in a verbal conditioning situation that resembles a counseling interview?

The results of experiment one and experiment two indicate that research question number one can be answered in the affirmitative. It does appear that it is possible to systematically condition opinion statements in the interview setting as it was employed in this study. The results also indicate that continuous reinforcement for the emission of opinion statements is more effective than variable interval reinforcement in conditioning opinion statements--at least under the conditions of the present study. One condition, however, that is conducive to conditioning under variable interval reinforcement condition is the prior reinforcement of "other" responses.

An unexpected finding was that CII was unable to correctly administer continuous reinforcement as planned. CII reinforced opinion statements correctly only about three-fourths of the time. It is interesting to note, however, that significant conditioning of opinion statements occurred in spite of this fact. Thus it appears that the density of reinforcement was great enough during the "continuous reinforcement" stages of experiment two to effectuate significant

conditioning. While no comparable data on the efficiency of CI are available, there is some evidence to suggest that the efficiency of the two operant conditioners was about the same. A comparison of the increase from the random reinforcement stages to the continuous reinforcement stages in both experiments indicates that the increase was about the same. CI effectuated a mean increase of 34.5 opinion statements from stage one to stage two and a mean increase of 35.2 opinion statements from stage three to stage four. Under the same conditions CII effectuated a mean increase in opinion statements of 35.6 from stage one to stage two and a mean increase in opinion statements of 33.7 from stage three to stage four. These similarities in increase of opinion statements suggest that CI and CII were approximately equally effective under the "continuous reinforcement" conditions in conditioning opinion statements. Both CI and CII indicated that it was extremely difficult to administer continuous reinforcement in the appropriate stages. The high rates of verbalization plus some difficulty in immediately judging whether or not a statement was an opinion made the strict continuous reinforcement of opinion statements very difficult.

Another unexpected finding was that the variable reinforcement condition in group one of experiment two was relatively ineffective. As indicated above, during the random reinforcement conditions which preceeded the variable interval reinforcement conditions for this group the reinforcements followed opinion statements on 61 percent of the administrations. It seems probable that the reinforcements administered during the random reinforcement stages had the effect of

increasing the number of opinion statements emitted during these stages. If this was the case, the number of opinion statements emitted during stages one and three would have been spuriously high thus making a significant increase during stages two and four more difficult to achieve. The significant increase in opinion statements emitted under the variable interval conditions that followed reinforcement of non-opinion statements supports this contention. Another factor that could account for the relative inefficiency of the variable interval reinforcement in group one of experiment two was that the mean size of the interval was rather large. Ss in this group were reinforced on a variable interval schedule of 2 and 1/2 minutes. Some reinforcements were available after a period of 30 seconds while others were available only after 4 and 1/2 minutes had elapsed. McNair (1957) found that a variable interval schedule of 15 seconds was much more effective than a variable interval schedule of 1 minute in a verbal conditioning task. The variable interval schedule of 2 and 1/2 minutes in the present study thus might have been less effective than "continuous reinforcement" simply because the interval was too large and the Ss did not receive enough reinforcements for the reinforcements to exert precise control over the verbal behavior emitted.

The unexpected increase in non-opinion statements during the continuous reinforcement stages in experiment two can be accounted for by the fact that significantly more incorrect reinforcements (reinforcements following non-opinion statements and reinforcements administered during non-opinion statements) were administered during these stages than during any other stages. It seems apparent that

accidental reinforcement of non-opinion statements during these stages had the effect of increasing the rate of emission of these statements. Both opinion and non-opinion statements thus were conditioned in the group two Ss in experiment two. While some operant conditioners are more effective than others and this difference can be a function of the "personalities" of the Es (Rosenthal, 1966), the difference in the present study can be attributed to another factor. CII suffers from a moderate hearing deficit which is responsible for a relative inability to discriminate between different verbalizations. In the interview situation in the present study the Ss often talked "softly" and at a rapid rate. CII indicated during the course of experiment two that he often had considerable difficulty in hearing just what the Ss said. This relative inability to discriminate between verbalizations thus seems to be a factor in his reinforcing some non-opinions statements and in his hesitation before delivering the reinforcements for some opinion statements. As a result, some non-opinion statements were accidentally reinforced and some reinforcements were administered during non-opinion statements. It seems likely that these factors account for the increase of non-opinion statements during stages two and four of group two of experiment two.

Research question number two

Research question number two was stated as follows: Does the behavior of the operant conditioner during the baseline have any influence on subsequent conditioning of opinion statements in a verbal conditioning situation resembling a counseling interview?

The results of experiments one and two indicate that there is no stastically significant difference in mean gain scores from baseline conditions to reinforcement conditions among the groups that experienced different baseline behaviors by the operant conditioners. This finding is contrary to the Heller and Marlatt (1969) suggestion that the power of reinforcers in enhanced by the Ss experiencing silence or little verbal interaction during baseline conditions.

Literature pertaining to the quality of the relationship between the E and his Ss upon the S's performance in an experimental situation is conflicting. Some studies (i.e., Insko and Cialdini, 1969; Hoffman, Schackner, and Goldblatt, 1970; Pope and Siegman, 1970; Vitalo, 1970) suggest that the quality of the relationship may be a significant variable which could influence conditioning. Indeed, Insko and Cialdini (1969) suggest that reinforcement effects are enhanced by positive rapport between the S and the E in "attitudinal conditioning." Other studies, (i.e., Heller, Davis, and Meyers, 1966; Feitel, 1968; Shulman, 1969; Smith, 1968; Reece and Whitman, 1962) however, failed to support the contention that the relationship between E and his Ss is a significant variable influencing performance in an experimental or quasi-experimental setting. The present study, then, is in agreement with those studies which suggest that "the relationship" per se is not the most important variable in an experimental setting. It is also in agreement with the Reece and Whitman (1962) study which found that conditioning was a function of the reinforcement contingencies rather than "warmth" or "coldness" of the E.

Maser (1968) and Feitel (1968) also found that there was a relationship between the behaviors of the E and the S's reaction to the experiment and to E. Although there is no quantitative data relevant to the Ss reaction to the experimental treatments in the present investigation, both operant conditioners indicated that the Ss, for the most part, did not enjoy the stages where the operant conditioner was minimally responsive. Reports by CI indicated that the Ss experiencing silence during the baseline and the return to baseline conditions found this experience to be especially uncomfortable and stress producing. In fact, the only S to walk out of an "interview" in experiment one walked out during a silence stage. The reports by CI thus are in agreement with the suggestion of Matarazzo, Wiens, and Saslow (1965) who suggest that silence is stress producing, and the finding by Azrin et al. (1961) who found that all the Ss walked out of the interview after a short period of time when the Es failed to respond to their verbalizations. The "demand characteristics" (Orne, 1962) of the interviews in the present study,however, were that the Ss remain in the interview and that they talk to CI. Statements in the instructions and the letters all Ss in experiment one received--such as "the purpose of this study is to help make the college experience more meaningful to you and to other college students," and "the study is financed by a grant" undoubtably exerted pressure on the Ss to remain in the "interview" and talk. Thus in spite of some stress, Ss in group one in experiment one remained in the verbal conditioning situation and conditioning took place.

Also of interest is the fact that the Ss who received the random reinforcements during baseline stages emitted the highest total numbers of opinion statements during all conditions. It seems probable that the random reinforcements that followed opinion statements during the baseline and return to baseline conditions had the effect of increasing the rate of emission of opinion statements during these conditions. Indeed it seems probable that the random reinforcements that followed opinion statements could have had a carry over effect which influenced the susequent rate of responding during the continuous reinforcement conditions. The possibility that Ss exposed to the brief reinforcement history of random reinforcements were influenced by this history thus exists.

Comparatively good control over verbalizations emitted by the Ss was demonstrated by the reinforcement of non-opinion statements-reinforcement of opinion statements treatment in experiment two. Ss in this group emitted a very high number of non-opinion statements when they received reinforcement for doing so. They also emitted more opinion statements when opinion statements resulted in reinforcement. This occurred despite the fact that the reinforcement in both conditions was administered on a variable interval schedule of 2 and 1/2 minutes. Since there were no great differences between the numbers of opinion statements emitted by groups two and three during the various stages, the high number of non-opinion statements emitted by the group that received variable interval reinforcement for non-opinion statements during the baseline and return to baseline must have been due to the reinforcements administered for non-opinion

statements. The number of non-opinion statements emitted by this group remained comparatively high throughout all treatments suggesting that the reinforcement history of reinforcements for non-opinion statements also had a carry over effect to subsequent conditioning stages. Apparently the variable interval schedule of 2 and 1/2 minutes was not dense enough to overcome this carry over effect, but it was strong enough to effectuate significant conditioning of opinion statements under the conditions of this treatment.

Research question number three

Research question number three was stated as follows: Is there a difference in the numbers of opinion statements emitted in a verbal conditioning situation resembling a counseling interview for males and females?

The results of experiment one and experiment two indicate that the sex of the S was not a significant variable in the conditioning situation employed in this study. This lack of a sex difference in responsiveness to the reinforcing stimuli appears to be inconsistent with the results of Centers (1963) who suggested that males manifested more conditionability than females. The fact is, however, that Center's results also showed no statistically significant difference in conditionability between males and females.

Rosenthal (1966) also suggested that the sex of the S is an important variable in psychological research, particularly when the E is a male and the Ss are females. He suggested that ".... when interacting with female subjects, male experimenters behave in a more friendly, personally involved, and physically active manner." (p. 54) This suggestion would lead one to

expect superior conditioning in females. That this did not occur may possibly be explained by the fact that the operant conditioners were both trained to behave appropriately and consistently according to the treatment being administered. It seems likely that the operant conditioners were able to control most of their own behaviors that could have had different effects with males and females.

Research question number four

Research question number four was stated as follows: Is there any interaction between baseline behavior of the operant conditioner, the sex of the subject and the stage of treatment in the conditioning of opinion statements.

A significant group x stage interaction was found in both experiments. In experiment one the interaction was accounted for by the fact that groups one, two,and four showed conditioning during stages two and four while group three Ss showed a decrease in number of opinion statements emitted during these stages. This decrease, however, was not significant. These results were expected since groups one, two, and four received continuous reinforcement for the emission at opinions during stages two and four while group three Ss were engaged in normal conversation during these stages.

The group x stage interaction observed for experiment two resulted primarily from the differences in numbers of opinion statements emitted during stages two and three by the Ss in group one as compared to groups two and three. While the Ss in groups two and three showed significant increases from stage one to stage two and from stage three to stage four, the Ss in group one failed to show

this increase. Group two Ss showed a gain under reinforcement conditions that was practically the same as group two Ss in experiment one. This increase was apparently due to the continuous or near continuous reinforcement administered during these stages and would be expected. The gain in number of opinion statements emitted during stages two and four for group three Ss, however, occurred under variable interval reinforcement conditions, conditions which were relatively ineffective for group one Ss. Group one Ss, however, received random reinforcement during the baseline and return to baseline conditions, while group three Ss were given variable interval reinforcement for non-opinion statements. As indicated above the random reinforcements during the baseline may have had the effect of elevating the response rate during the baseline and return to baseline conditions. The high number of opinion statements emitted during stage three would seem to support this contention. The achievement of a significant increase in number of opinion statements emitted during stages two and four was, therefore, relatively difficult to achieve. Group three Ss, on the other hand, were reinforced for the emission of non-opinion statements during stages one and three. The number of opinion statements emitted during these stages, therefore, was probably not supuriously high as it was for group one Ss, and it was possible to achieve a significant increase in group three Ss.

The analysis of the data of experiment two also revealed a significant sex x group interaction. Group one males emitted more opinion statements than group one females, especially during stages three and four. Group three females, however, emitted more opinion statements than group three males, especially during stages two and three.

The male Ss in group one showed a decrease in number of opinion statements from stage three to stage four while the females of this group showed an increase from stage three to stage four. On the surface it appears that the reinforcement condition of stage four was more effective for females than males of group one--the random reinforcement variable interval reinforcement group. Close examination of the raw data, however, revealed that this effect was due largely to the responses of one male S who emitted a grand total of 271 opinion statements during stage three--the random reinforcement stage during the second "interview" for this group. If the responses of this male are eliminated, the mean difference (63.8) is lowered considerably (9.6). It is worthy of note that the male S in question received all 10 of his reinforcements during the random reinforcement stage after he had emitted opinion statements.

Also, females that received reinforcement for the emission of non-opinion statements during the baseline and return to baseline conditions and variable interval reinforcement for the emission of opinion statements during the reinforcement stages showed more conditioning from stage one to stage two than did the males of this group. The male Ss, on the other hand, showed more conditioning than the female Ss from stage three to stage four of this condition. Apparently females condition better than males under variable interval reinforcement that follows reinforcement of other statements during the first session while the reverse is true for the second session. The reasons for this interaction are not readily apparent. No discernable trends in the raw data or in the data on effectiveness

of reinforcements administered to males or females in experiment two exist which explain this interaction. A quote from Rosenthal (1966) would seem to be appropriate here:

> It appears that at least in studies of verbal conditioning, when an experiment is so designed as to permit the assessment of complex interactions, these interactions are forthcoming in abundance. Only rarely, however, are most of them predictable or even interpretable. (p. 43)

Interactions can occur because variables actually have a mutual effect on another variable, because of uncontrolled effects operating at one level of an experiment but not at another level, or because of chance (Kerlinger, 1964). The significant sex x group interaction in experiment two can apparently be attributed to chance since no mutual effects of variables on another variable were identificable and since control of the different variables was relatively complete. In any event, the present study apparently does not add much in the way of knowledge concerning the interaction of sex of the S with other experimental variables in verbal conditioning.

Research question number four can be answered in the affirmative. There are, under certain circumstances, interactions between the baseline behavior of the operant conditioner, the sex of the S, and the stage of treatment in the conditioning of opinion statements. Why these interactions occur and why they occur under certain circumstances and not others is not readily apparent.

General Discussion

Of interest in the present study is the fact that almost all of the Ss emitted opinion statements and non-opinion statements at an

apparently very high rate during the "interviews." Although there is no objective data available on this observation, it seems that on the whole the Ss in this study emitted verbalizations at a higher rate than might be expected in a counseling interview per se. Especially noticable is the high rate of emission of opinion statements during the non-reinforcement conditions.

As indicated above, the "demand characteristics" of the "interview" situation were that the Ss stay in the "interview" and that they talk to the operant conditioners. The high rate of verbalization can apparently be particularly attributed to this fact. Also relevant to high rates of verbalization are the facts that the "interviews" were reported as somewhat stressful by many of the Ss (in all treatments except the normal conversation stages) and that the instructions and behaviors emitted by the operant conditioners were relatively non-specific (ambigious). A series of studies (Pope and Siegman, 1962, 1965; Pope, Siegman, and Blass, 1970; Pope et al., 1971; Siegman and Pope, 1965) provided evidence which indicated that stress which leads to anxiety, and non-specificity by an interviewer both lead to high verbal production by Ss in an interview situation. These findings would also appear to be relevant to the high rates of verbalization by most Ss in the present study.

The high rates of opinion statements per se is also apparently due to the influence of several factors. In a college like Simpson College which purports to offer a "liberal arts education," students are encouraged to be "independent thinkers." It seems probable,

therefore, that "independent thinking"--which involves formulating one's own opinions on various subjects--is reinforced by most professors on the Simpson College campus. Thus, the Ss in the present study may have had verbal repertoires which included more opinion statements than might be expected in other Ss in other settings. The pre-experimentally learned verbal habits acquired as a result of the reinforcement histories of the Ss may therefore, have been partially responsible for the high rate of opinion statements emitted during the conditions of this study. This interpretation would be consistent with the finding that pre-experimentally acquired verbal habits can influence the results obtained in verbal conditioning studies (Clance and Dixon, 1965; Laungani, 1970). In addition the instructions given to each S may have contributed to the development of a "set" to respond in a manner consistent with the stating of opinions. Before experiment one was conducted, trial runs with different sets of instructions indicated that directions that included phrases such as "we are interested in the attitudes and opinions students hold" or "we want to find out how people feel about things," stimulated the emission of large numbers of opinion statements. Consequently, the instructions were changed to the ones presented in chapter three with the expectation that they would be less biasing and that this would result in a more reasonable operant level of opinion statements being emitted during the non-reinforcement stages. This expectation did not fully materialize. Also, it was soon discovered that the students responded to many different cues that were associated with the experimental situation. Orne (1962) noted that a subject's behavior in an experiment can be influenced with such cues as "... the rumors or campus

scuttlebutt about the research, the information conveyed during the original solicitation, ... as well as all explicit and implicit communication during the experiment proper." (p. 779) It developed that students communicated with each other at least to some extent. A few students reported to the operant conditioners that they had talked to other students about the study and what they talked about during the "interviews." It seems possible that this communication between students could have influenced at least the content of subsequent interviews. Also, a few Ss apparently "prepared" for the second "interview" by making out notes about what they wanted to talk to the operant conditioners about. They thus were able to provide cues for themselves which could have influenced the content of at least a few "interviews." In any event, the fact that conditioning of opinion statements occurred under most reinforcement conditions despite the high operant level supports the contention that the reinforcements were effective in conditioning verbal behavior.

One interesting and unexpected fact that emerged during the course of the study was that Negro Ss found it very difficult to interact with the operant conditioners, both of whom were white. Two out of three Negro students walked out of the "interview" situation; one in each experiment. Apparently the Negro Ss found it difficult to form a relationship with the white operant conditioners, a suggestion supported by Sattler (1970) and Vontress (1971). The Negro S who did not walk out of the first interview was a member of the experimenter's Introduction to Psychology class and he was very much in need of the points he would earn because he

was on the "borderline" and needed to pass the course so he would be eligible to play football. He did indicate to the experimenter, however, that he found it difficult to remain in the "interview" situation. Apparently racial differences are not conducive to the development of a working relationship in an interview or counseling situation. The third S to walk out was a white male who apparently found the minimal interaction during a random reinforcement stage intolerable. Indeed, CII reported that this subject said that "... it just isn't worth it! Greable can keep his damned 20 points!", and then he walked out of the "interview."

In any event, the results of experiment one and experiment two are consistent with the majority of the studies of verbal conditioning. Significant conditioning occurred in the interview situations as employed in the present study. The conditioning effects were most effective under continuous or near continuous reinforcement conditions. Conditioning also occurred under the variable interval reinforcement that was preceeded by reinforcement of "other" responses. The most important variable seemed to be the reinforcement contingencies rather than the behaviors of the operant conditioners during the baseline and return to baseline conditions.

Implications of the Study

The present study clearly was not a study of the counseling interview per se. It was, however, a study of verbal conditioning in a situation that resembled a counseling interview. While the degree of resemblence is debatable, it seems clear that this type of research does have implications for counseling (Strong, 1971).

Strong (1964) makes the point that "...any research dealing with the nature of verbal behavior is of vital importance to counselors" (p. 660). Strong (1964) also suggests that "Immediate success of the counseling enterprise is ... largely dependent upon the knowledge and techniques available to deal with verbal behavior" (p. 660). The publication of Skinner's (1957) book which indicated that human speech is human verbal behavior and as such is subject to the same laws that are relevant to other behaviors emitted by a wide variety of organisms was a major development which influenced practice in counseling and psychotherapy. The ultimate development was that counselors began applying conditioning techniques in hopes of changing client behavior in a variety of settings.

While verbal conditioning differs from counseling and psychotherapy, Krasner (1965) suggest that "... the variables effecting change in both instances are the same ..." (p. 228). The results of numerous studies indicate that "the relationship" is a casual factor in effective counseling and psychotherapy. The objective data of the present study, however, do not support the contention that "the relationship" is an important factor in verbal conditioning. The critical factor in the conditioning that occurred was the reinforcement per se rather than the behavior of the operant conditioner during the baseline and return to baseline conditions.

While there are no objective data on the question of satisfaction of the Ss in the various treatment groups both operant conditioners reported to the experimenter that most Ss emitted fewer negative reactions to the "interviews" when there was interaction

between the S and the operant conditioners. This was especially true in the normal conversation stages of experiment one. It would seem that fewer negative reactions to the interview situation might be a factor in maintaining a counseling relationship especially when the relationship is voluntary and to be extended over a period of time. One implication of the study, therefore, is that the establishment of a "positive relationship" may not be a stastically significant factor in short term verbal conditioning. However, the development of rapport may influence how the S feels about the interview situation and thus be a factor in the long range success of counseling and psychotherapy regardless of whether the counselor or therapist uses the technique of positive reinforcement of desired responses.

Another implication is suggested by the fact that the operant conditioners were able to vary their baseline behavior after they were trained to do so. This fact plus the finding by Ullmann et al. (1968) that the behavior of an experimenter can be varied systematically to create conditions of rapport which have effects on an S's behavior, suggest that experimenters and counselors can be trained to create conditions that facilitate the development of a "positive relationship." Perhaps more counselors would be more effective if they received training designed to enable them to create "positive relationships" in counseling situations.

In addition, the finding that the negro subjects in the present study found it difficult to remain in the "interview" situation suggests that positive rapport is relatively difficult to establish when there are racial differences between the experimenter and his Ss or a counselor

and his clients. The implication here is that racial differences may be a variable which is too difficult to eliminate at least in short term relationships.

CHAPTER VI

SUMMARY

Two experiments were conducted in order to assess the influence of the operant conditioner's behavior during baseline conditions upon the subsequent verbal conditioning of opinion statements emitted by freshmen undergraduate students at Simpson College.

During experiment one, male and female students received one of four treatments from an operant conditioner in an "interview" situation. These treatments were silence by the operant conditioner followed by continuous reinforcement for the emission of opinion statements, random reinforcement followed by continuous reinforcement for the emission of opinion statements, silence by the operant conditioner followed by normal conversation, and normal conversation followed by continuous reinforcement for the emission of opinion statements. The treatments were administered during two "interviews" in an ABAB design. All sessions were tape recorded. The opinion statements were tallied as they were emitted, by the operant conditioner pressing foot switches that activated impulse counters in a nearby room. In addition, a listener listened to the tapes and counted the number of opinion and non-opinion statements that were emitted during each interview. The results indicated that the baseline behavior of the operant conditioner was not a statistically significant casual factor in the subsequent conditioning of opinion statements. Similar and non significantly different conditioning effects occurred regardless of whether continuous reinforcement was preceeded by silence from the operant conditioner,

random reinforcement administered by the operant conditioner, or normal conversation. There was no conditioning in the absence of reinforcement. The important causal factor in the conditioning therefore appeared to be the reinforcements administered for the emission of opinion statements.

During experiment two, male and female students received one of three treatments in the same interview setting that was employed in experiment one. These treatments were random reinforcement followed by variable interval reinforcement for the emission of opinion statements, random reinforcement followed by continuous reinforcement for the emission of opinion statements, and variable interval reinforcement of opinion statements. As in experiment one, the treatments were administered during two "interviews" in an ABAB design. All treatments were taped and a listener tallied the number of opinion and non-opinion statements that were emitted during each interview. Verbal conditioning occurred when random reinforcement was followed by continuous reinforcement and after the variable interval reinforcement of non-opinion statements was followed by the variable interval reinforcement for the emission of opinion statments. The reinforcements that were administered during the continuous reinforcement stages, however, were not all correctly administered and this resulted in the conditioning of non-opinion statements. No conditioning was demonstrated under the random reinforcement-variable interval reinforcement treatment.

The results of the two experiments indicated that it is possible to verbally condition opinion statements emitted in an interview setting. There was no difference in the effects of the reinforcements upon males and females. There was, however, a significant sex x group

interaction suggesting that males and females responded differently to different treatments in different stages in experiment two. Why this interaction occurred was not apparent. In addition, reports from the operant conditioners indicated that the subjects expressed less dissatisfaction with the "interviews" when the operant conditioners were more responsive. ALthough the baseline behaviors of the operant conditioners was not a significant factor in subsequent conditioning of opinion statements in this short term study, it was suggested that rapport between the subject and the experimenter or counselor might be an important factor in long term studies or in counseling relationships per se.

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APPENDICES

Appendix A

Letter Sent to Subjects in Experiment One

SIMPSON COLLEGE
FOUNDED 1860
INDIANOLA, IOWA 50125

April 11, 1970

Dear

You are one of a number of students whom have been selected from the freshman class for invitation to participate in a continuing study designed to make the college experience more meaningful. Your selection was accomplished by use of a random sampling technique which means that you will, in effect, represent a fairly large number of students here at Simpson College.

The procedure will consist of two 50 minute interviews on sucessive days for each student selected to participate in this study. Since the study is financed by a portion of a research grant from the U.S. Office of Education, we will be able to provide remuneration to you for your time and effort at the rate of $2.00 per interview.

You will be contacted in the near future in order to work out the details and arrange a time for your interviews. We sincerely hope you will be able to participate in the study since it is quite relevant to your college experience as well as having broad implications for education at all levels.

Sincerely,

William E. Greable

William E. Greable
Assistant Professor of Psychology

Waller B. Wiser

Waller B. Wiser
Vice President: Dean of Academic Affairs

WEG/jas

Appendix B

Raw Data for Experiment One

Table 5. Opinion statements emitted by group one

Subject	Stage One					Stage Two					Stage Three					Stage Four				
Male																				
1	19	15	16	17	16	21	23	27	28	31	18	18	23	28	23	29	30	32	27	28
2	11	23	16	19	13	13	14	23	21	12	18	19	19	26	18	29	24	30	23	33
3	18	21	21	18	23	26	19	20	23	25	23	13	16	15	11	20	24	22	21	19
4	29	22	33	41	12	40	44	40	42	4	29	34	15	10	15	49	32	26	41	44
5	18	16	20	15	11	22	17	27	22	24	19	14	13	15	4	14	13	25	14	19
Female																				
1	9	25	28	24	19	28	41	24	34	22	19	19	25	30	25	48	38	29	28	33
2	28	35	35	30	30	30	33	26	40	32	24	32	26	29	38	41	31	48	28	29
3	16	10	21	11	20	16	21	25	18	14	2	10	3	8	1	4	5	16	15	15
4	26	45	31	22	21	33	40	36	43	50	15	27	36	22	39	42	44	43	47	56
5	4	15	16	15	10	28	28	33	24	20	3	6	15	17	21	27	35	26	29	30

Table 6. Opinion statements emitted by group two

Subject	Stage One					Stage Two					Stage Three					Stage Four				
Male																				
1	25	28	24	29	41	37	38	38	42	53	16	25	15	26	22	35	33	30	37	41
2	16	21	18	30	15	25	22	32	37	30	22	22	24	15	23	37	34	34	32	26
3	33	37	41	31	35	43	48	32	48	28	27	25	28	29	30	37	42	43	41	36
4	22	19	17	23	30	19	30	34	33	21	19	24	23	25	28	26	32	34	21	35
5	28	41	36	41	38	37	48	43	38	47	33	48	52	38	35	26	56	47	40	41
Female																				
1	18	34	25	20	8	29	23	14	31	20	29	19	25	14	15	31	33	38	31	37
2	24	27	32	35	28	32	38	43	30	32	35	37	36	32	19	27	32	40	38	17
3	19	27	30	15	15	20	32	26	28	37	27	35	31	43	36	37	57	32	43	33
4	12	19	22	18	26	42	32	31	27	31	20	29	26	23	21	33	33	19	40	24
5	15	23	25	26	21	26	21	23	15	15	13	37	29	35	23	26	28	36	29	23

Table 7. Opinion statements emitted by group three

Subject	Stage One					Stage Two					Stage Three					Stage Four				
Male																				
1	22	32	33	37	33	11	24	14	26	30	24	40	38	37	22	6	17	8	17	13
2	4	25	33	21	28	11	24	20	16	30	21	27	20	29	34	22	24	31	16	29
3	5	2	1	13	2	1	0	0	3	5	1	0	1	0	10	1	0	1	0	4
4	24	42	39	36	32	21	20	14	26	34	22	29	21	23	29	8	14	7	17	18
5	9	29	19	21	25	21	19	30	26	25	22	28	37	26	28	23	29	16	38	37
Female																				
1	12	10	17	10	13	15	13	11	7	4	11	14	14	11	16	13	6	8	12	10
2	24	27	27	25	18	16	26	15	14	10	30	24	16	25	24	20	4	10	12	15
3	23	30	29	29	24	9	23	21	18	17	11	12	6	3	10	12	15	7	16	23
4	6	15	29	25	27	14	14	14	10	32	18	14	19	18	16	24	18	12	7	3
5	16	12	8	8	7	4	22	11	3	5	15	13	15	17	7	10	11	13	10	10

Table 8. Opinion statements emitted by group four

Subject	Stage One					Stage Two					Stage Three					Stage Four				
Male																				
1	12	13	6	11	16	18	27	25	37	31	15	18	13	5	16	33	23	23	31	27
2	7	8	13	11	13	16	24	21	28	19	10	5	13	24	15	21	26	27	22	30
3	2	21	23	2	15	24	8	15	27	26	15	10	20	5	2	29	30	31	23	20
4	15	37	24	31	12	47	23	39	29	36	23	15	1	12	12	1	30	30	25	27
5	18	19	12	17	22	18	27	25	37	31	15	18	13	5	16	33	23	23	31	27
Female																				
1	13	10	5	17	15	25	28	20	9	26	15	21	9	17	20	32	25	14	26	15
2	13	13	16	13	6	10	21	14	23	19	11	18	9	8	16	28	16	27	21	30
3	41	38	11	13	44	27	34	24	37	61	13	28	22	30	33	37	37	44	33	36
4	20	15	10	12	12	14	13	19	16	24	15	11	9	9	15	24	22	2	21	15
5	16	23	8	16	9	14	20	26	28	20	19	11	21	7	7	19	15	25	13	11

Table 9. Non-opinion statements emitted by group one

Subject / Male	Stage One					Stage Two					Stage Three					Stage Four				
1	32	28	53	67	54	54	54	55	50	61	43	51	53	60	45	34	48	38	49	45
2	17	20	28	14	25	30	27	20	18	25	25	17	20	17	24	17	13	7	10	12
3	5	6	8	12	3	3	10	8	5	10	19	11	7	10	3	6	14	7	4	11
4	23	41	27	12	20	24	16	14	21	17	14	18	59	64	70	20	10	22	6	17
5	19	13	19	21	14	19	10	11	12	15	22	21	21	14	16	10	15	13	10	10
Female																				
1	36	19	29	12	16	22	19	23	15	11	38	17	29	24	36	20	8	14	24	19
2	21	16	21	24	32	18	21	31	15	22	37	27	27	39	25	23	25	27	23	20
3	7	5	10	10	10	5	13	8	10	7	12	14	6	12	14	15	5	2	23	7
4	18	15	20	23	21	21	19	25	20	22	33	29	33	41	33	39	40	28	18	28
5	30	18	20	12	14	11	11	14	6	8	39	30	18	9	10	6	13	15	15	26

Table 10. Non-opinion statements emitted by group two

Subject	Stage One					Stage Two					Stage Three					Stage Four				
Male																				
1	27	47	68	54	33	31	18	36	32	25	39	30	36	27	40	20	36	36	35	38
2	14	17	12	21	43	22	17	26	13	21	20	22	19	20	20	12	6	16	8	8
3	16	12	15	15	7	3	13	17	7	22	11	20	29	26	31	6	16	16	17	16
4	11	17	24	17	18	21	8	8	10	16	11	10	6	6	4	10	10	7	5	9
5	14	16	17	10	19	10	10	30	9	15	8	17	21	26	21	26	5	1	4	11
Female																				
1	23	11	14	21	14	24	23	24	14	21	17	19	24	25	19	27	14	12	5	5
2	28	25	15	19	22	19	9	14	15	23	27	18	25	21	33	18	25	25	12	34
3	16	22	29	35	37	22	21	20	9	5	39	29	38	31	32	27	22	22	25	17
4	32	27	32	34	38	22	24	31	23	21	28	22	26	24	26	16	9	32	26	24
5	10	7	7	11	11	6	10	8	6	8	26	9	9	6	20	17	11	9	8	9

Table 11. Non-opinion statements emitted by group three

Subject / Male	Stage One					Stage Two					Stage Three					Stage Four				
1	17	12	18	25	17	9	18	15	14	16	24	11	11	10	25	3	10	9	11	16
2	8	6	1	4	3	0	5	6	2	3	11	6	9	16	14	14	13	13	12	23
3	15	13	7	14	9	8	8	12	16	7	11	6	4	7	7	6	3	3	4	12
4	42	31	41	36	51	38	29	40	49	60	42	31	41	36	51	38	29	40	49	60
5	47	28	39	47	39	22	19	19	25	25	47	28	39	47	39	22	19	19	25	25
Female																				
1	25	27	24	29	24	32	34	40	42	25	26	30	34	27	30	31	36	45	40	27
2	24	34	37	28	34	33	26	9	31	29	27	27	37	27	36	29	13	37	49	41
3	22	14	10	20	9	8	12	20	24	31	29	20	22	15	32	40	24	36	37	37
4	32	32	21	26	34	34	44	27	35	44	20	28	20	18	21	38	40	26	27	32
5	19	24	23	24	21	31	30	29	39	19	25	26	30	34	24	26	37	28	54	29

Table 12. Non-opinion statements emitted by group four

Subject	Stage One					Stage Two					Stage Three					Stage Four				
Male																				
1	24	29	30	26	42	23	19	23	23	25	33	30	33	13	22	19	20	12	20	23
2	16	19	10	7	5	11	6	4	10	12	11	9	5	19	7	16	3	6	13	9
3	18	8	5	14	10	5	8	11	14	7	25	17	10	19	13	23	13	7	9	10
4	18	25	20	20	12	17	19	15	20	21	27	46	39	41	49	20	8	11	16	32
5	18	23	24	20	36	23	19	23	23	25	33	30	33	13	22	19	20	12	20	23
Female																				
1	17	11	15	24	15	14	21	24	16	11	21	30	34	13	35	32	28	14	17	27
2	32	38	32	24	21	24	24	25	22	29	31	31	18	30	17	22	22	32	24	15
3	20	14	5	14	17	12	19	11	10	22	34	34	43	24	20	19	13	10	15	16
4	24	20	18	22	17	13	22	14	32	20	18	13	16	20	16	15	20	4	17	17
5	14	27	30	15	16	15	22	20	16	24	11	17	17	17	25	17	11	9	15	12

Appendix C

Raw Data for Experiment Two

Table 13. Opinion statements emitted by group one

Subject	Stage One					Stage Two					Stage Three					Stage Four				
Male																				
1	11	31	27	29	13	28	32	36	35	34	29	35	27	31	36	40	39	37	34	43
2	36	32	35	39	38	44	23	33	36	37	40	45	40	30	40	41	34	35	47	40
3	28	29	26	21	18	18	27	23	26	20	24	24	25	18	29	25	29	35	21	24
4	12	19	20	12	11	18	11	17	14	30	22	24	23	20	25	21	20	16	26	28
5	16	19	13	13	31	8	11	3	14	20	53	56	50	60	52	36	47	16	34	57
Female																				
1	30	30	40	40	33	30	24	30	28	30	33	25	24	13	16	19	19	26	20	21
2	11	21	20	19	25	20	24	15	17	12	20	15	13	22	23	30	27	25	35	52
3	12	13	12	9	9	5	19	25	25	17	11	18	26	25	27	28	27	25	20	23
4	18	25	19	22	31	29	29	17	19	18	23	22	27	23	25	22	32	20	27	40
5	18	18	18	18	20	24	26	25	26	23	31	22	14	18	23	18	25	16	22	16

Table 14. Opinion statements emitted by group two

Subject / Male	Stage One					Stage Two					Stage Three					Stage Four				
1	18	20	18	13	23	18	17	19	13	17	23	15	10	11	18	9	17	9	9	10
2	21	19	21	14	25	15	34	34	38	43	20	25	24	25	16	28	29	27	36	45
3	23	26	24	21	30	42	31	52	35	42	25	22	20	25	30	34	39	30	36	61
4	20	30	29	28	19	23	35	37	32	32	17	15	11	10	14	24	17	17	30	30
5	11	12	20	18	23	18	20	20	24	29	23	28	20	20	21	32	29	24	37	25
Female																				
1	25	31	28	33	29	33	33	35	31	38	25	41	28	27	24	25	30	30	32	32
2	15	21	24	17	25	29	28	29	13	32	18	23	27	21	21	15	20	22	24	28
3	6	24	20	27	29	16	32	41	29	48	5	29	34	22	21	30	25	22	26	28
4	19	20	15	12	12	16	23	6	29	30	15	24	22	13	9	21	30	28	47	39
5	18	24	28	26	24	32	28	28	25	29	23	26	18	24	14	31	31	27	30	27

Table 15. Opinion statements emitted by group three

Subject	Stage One					Stage Two					Stage Three					Stage Four				
Male																				
1	19	20	29	25	20	22	22	25	18	28	15	11	26	17	17	19	20	29	30	36
2	12	20	17	24	8	28	22	25	24	16	15	16	21	13	15	10	26	16	32	31
3	26	26	23	20	20	18	16	24	21	30	20	22	22	13	16	20	21	27	22	36
4	6	20	15	10	25	21	10	16	20	14	11	11	11	6	12	10	22	24	21	25
5	16	23	25	28	25	25	46	17	33	38	20	16	11	18	14	9	25	18	20	28
Female																				
1	13	22	15	14	20	29	25	22	14	43	23	19	16	10	23	12	21	15	17	15
2	30	33	24	25	24	29	31	33	36	47	20	20	25	32	23	19	24	26	21	31
3	20	27	22	22	25	38	37	27	29	30	29	43	43	23	15	35	46	32	26	27
4	10	36	28	22	37	27	31	34	32	32	35	28	25	24	29	18	22	27	35	47
5	11	26	27	20	16	27	31	43	36	34	15	14	16	18	19	20	19	23	25	25

Table 16. Non-opinion statements emitted by group one

Subject	Stage One					Stage Two					Stage Three					Stage Four				
Male																				
1	48	34	33	18	15	34	25	11	23	35	17	21	28	33	23	15	19	24	29	21
2	14	9	17	10	10	10	9	6	9	15	19	15	12	16	16	15	10	9	10	11
3	15	26	14	28	22	25	27	20	27	21	34	11	18	20	17	21	20	23	18	13
4	15	9	10	7	11	8	13	17	9	10	14	19	19	28	29	26	24	22	23	14
5	36	21	8	29	29	13	8	6	7	10	14	15	14	12	11	5	10	3	9	16
Female																				
1	42	41	31	47	54	41	40	35	33	54	34	36	39	42	42	32	30	37	47	52
2	40	30	32	29	41	37	33	31	29	32	54	34	33	39	35	16	25	26	26	24
3	21	19	12	10	11	16	24	15	13	14	13	12	14	13	5	4	9	8	3	3
4	47	46	41	46	44	43	30	22	23	40	32	37	30	35	43	11	24	14	20	32
5	26	15	25	31	33	21	25	24	17	21	16	14	26	27	14	10	11	17	15	27

Table 17. Non-opinion statements emitted by group two

Subject / Male	Stage One					Stage Two					Stage Three					Stage Four				
1	10	15	11	5	4	9	4	6	4	3	7	5	7	9	5	14	4	10	5	3
2	30	51	36	39	27	52	28	23	26	57	60	55	39	37	38	46	48	40	51	51
3	48	47	46	60	38	36	53	36	43	42	42	36	67	38	38	31	42	57	54	60
4	23	25	27	25	26	22	21	19	29	25	18	18	25	23	18	20	15	14	23	31
5	26	38	31	35	30	41	42	42	45	44	13	20	27	18	25	14	15	20	13	39
Female																				
1	15	25	16	13	12	13	15	14	20	19	38	27	19	30	15	17	22	16	22	29
2	34	37	32	37	30	26	22	27	51	56	37	35	28	43	26	47	42	54	42	44
3	59	49	70	48	50	67	41	30	58	66	42	35	38	42	39	72	68	74	71	85
4	21	31	18	37	33	28	22	30	29	44	28	30	44	48	33	30	43	34	37	44
5	45	44	34	44	34	37	39	37	43	54	34	35	50	32	34	38	49	39	31	25

Table 18. Non-opinion statements emitted by group three

Subject / Male	Stage One					Stage Two					Stage Three					Stage Four				
1	57	48	44	61	63	55	49	47	54	60	49	43	35	25	34	18	42	28	29	42
2	37	40	32	47	19	30	34	24	22	19	25	30	46	20	15	7	36	31	34	23
3	29	39	46	39	27	24	33	29	28	34	37	46	30	36	29	30	34	30	26	34
4	25	25	23	25	25	24	18	29	11	13	23	20	13	14	18	10	16	17	19	37
5	51	69	69	62	76	69	47	54	54	48	43	63	58	40	38	48	61	64	42	40
Female																				
1	59	62	60	75	54	29	51	61	38	57	63	60	53	70	45	55	36	41	29	40
2	39	38	30	43	40	27	52	36	23	62	39	36	32	37	37	25	33	38	40	44
3	34	41	44	37	38	33	45	65	45	57	36	47	41	38	28	40	47	44	47	38
4	55	64	65	45	57	47	54	46	49	55	29	46	42	51	54	50	44	51	34	52
5	49	56	57	56	54	65	72	52	54	79	51	54	54	58	66	59	64	69	69	89

Appendix D

Mean Number of Opinion Statements Emitted by Each Group and Each Sex of Each Group During Each Stage of Experiment One

Table 19. Mean number of opinion statements

Group	Stage				Total
	One	Two	Three	Four	
One					
Male	96.6	121.6	91.2	135.6	111.3
Female	109.2	144.8	98.4	157.4	127.4
Total	109.2	133.2	94.8	146.5	119.4
Two					
Male	139.2	180.6	134.8	179.2	158.5
Female	112.8	139.6	137.8	163.4	138.4
Total	126.0	160.1	136.3	171.3	148.4
Three					
Male	113.4	90.2	113.8	79.2	99.2
Female	94.2	69.2	75.8	60.2	74.9
Total	103.8	79.9	94.8	69.2	86.9
Four					
Male	76.0	131.6	63.2	129.2	100.0
Female	81.8	114.4	78.8	117.6	98.2
Total	78.9	123.0	71.0	123.4	99.0
Total					
Male	106.3	131.0	100.8	130.8	117.2
Female	99.5	117.0	97.7	124.7	109.7
Total	109.2	124.0	99.3	127.7	113.4

Appendix E

Mean Number of Non-opinion Statements Emitted by Each Group and Each Sex of Each Group During Each Stage of Experiment One

Table 20. Mean number of non-opinion statements

Group	Stage				Total
	One	Two	Three	Four	
One					
Male	116.2	117.8	144.8	89.6	117.1
Female	91.8	79.4	126.4	96.6	98.5
Total	104.0	98.6	135.6	93.1	107.8
Two					
Male	112.8	88.0	104.0	75.8	95.2
Female	108.0	84.4	118.6	90.2	100.3
Total	110.4	86.2	111.3	83.0	97.8
Three					
Male	114.0	93.0	114.6	95.6	104.3
Female	123.4	145.6	135.0	171.8	144.0
Total	118.7	119.3	124.8	133.7	124.2
Four					
Male	95.8	95.4	119.8	76.8	97.0
Female	100.4	96.4	117.0	88.6	100.6
Total	98.1	95.9	118.4	82.7	98.8
Total					
Male	109.7	98.6	120.8	84.5	103.4
Female	105.9	101.5	124.0	111.8	110.8
Total	107.8	100.1	122.4	98.2	107.1

Appendix F

Mean Number of Opinion Statements Emitted by Each Group and Each Sex of Each Group During Each State of Experiment Two

Table 21. Mean number of opinion statements

Group	Stage				Total
	One	Two	Three	Four	
One					
Male	115.8	119.6	171.6	165.0	143.0
Female	106.2	113.8	107.8	127.0	113.7
Total	111.0	116.7	139.7	146.0	128.4
Two					
Male	105.2	144.2	97.8	136.8	121.0
Female	110.4	142.6	110.8	140.0	126.0
Total	107.8	143.4	104.3	138.4	123.5
Three					
Male	100.4	115.8	77.8	115.4	102.4
Female	113.8	159.4	117.4	125.6	129.0
Total	107.1	137.6	97.6	120.5	115.7
Total					
Male	107.1	115.7	115.7	139.0	122.0
Female	108.6	138.6	112.0	130.8	122.5
Total	107.9	132.6	113.9	134.9	122.0

Appendix G

Mean Number of Non-opinion Statements Emitted by Each Group and Each Sex of Each Group During Each Stage of Experiment Two

Table 22. Mean number of non-opinion statements for experiment two

Group	Stage				Total
	One	Two	Three	Four	
One					
Male	97.6	79.6	95.0	82.0	88.6
Female	162.8	142.6	144.4	104.8	138.7
Total	130.2	111.1	119.7	93.4	113.6
Two					
Male	150.6	150.4	137.6	144.0	145.7
Female	173.6	177.6	172.4	215.0	184.7
Total	162.1	164.0	155.0	179.5	165.2
Three					
Male	215.6	181.8	162.6	163.6	180.9
Female	250.4	250.8	233.4	199.6	233.6
Total	233.0	216.3	198.0	199.6	207.3
Total					
Male	154.6	137.3	131.7	129.9	138.3
Female	195.6	190.3	183.4	173.1	185.5
Total	175.1	163.8	157.6	151.5	161.9