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# A comparison of the reinforcing value of five stimuli conditions on the production of self-reference statements in a quasi-counseling situation.

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A COMPARISON OF THE REINFORCING VALUE OF FIVE STIMULI  
CONDITIONS ON THE PRODUCTION OF SELF-REFERENCE  
STATEMENTS IN A QUASI-COUNSELING SITUATION

A Dissertation Presented

By

JOHN JOSEPH KENNEDY

Submitted to the Graduate School of the  
University of Massachusetts in  
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June, 1967

Major Subject: Guidance and Counseling

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CHAPTER I  
INTRODUCTION

Writing in 1935, E. L. Thorndike (1) demonstrated that verbal behavior could be modified by the proper administration of verbal rewards and punishments. Interest in the modification and manipulation of verbal behavior using conditioning procedures grew during the ensuing two decades (2, 3, 4, 5). Verbal behavior, however, was viewed primarily as an intervening vehicle through which such mentalistic or intrapsychic entities as feelings, ideas, and attitudes were expressed. These subjective intrapsychic events constituted meaningful subject matter. It was not until Greenspoon's (6) pioneering study, reported in 1955, that verbal behavior was treated as external and measurable behavior significant in its own right. The Greenspoon study clearly demonstrated that verbal behavior was amenable to operant conditioning and served as the reference point for a substantial body of subsequent research on verbal behavior based on operant learning theory.

This body of research has come to be known as verbal operant conditioning, or more commonly, just verbal conditioning. Strong (7) points out that verbal conditioning studies attempt to answer such questions as: (a) is verbal behavior amenable to behavioristic treatment in the same

manner as other behavior? (b) does it respond in a lawful manner? (c) what are the effects of different schedules of reinforcement? and (d) what stimuli conditions have reinforcing value? Krasner (8) has pointed to the features that distinguish verbal conditioning studies as a unique body of research. Briefly, verbal operant conditioning studies require subjects (Ss) to emit verbal behavior as a part of a given task and the experimenter (E) reinforces a pre-selected class of S's behavior through carefully controlled verbal or non-verbal behavioral cues. According to the operant conditioning paradigm, if the S's verbal response results in an increased probability of future response occurrences, the response has been reinforced. It should be noted that "the only defining characteristic of a reinforcing stimulus is that it reinforces" (9: 73). And to the extent that a stimulus, or event, reinforces a response, it possesses reinforcing value.

Paralleling and closely related to the increased interest and activity in verbal conditioning is the emergence of a new point of view in both the counseling and psychotherapeutic professions. This approach is known as behavior therapy and behavior counseling, respectively, and, broadly defined, refers to the application of findings in the field of learning to clinical treatment. Within this broad approach there are two principal schools: one which relies primarily upon operant conditioning techniques and the other which is



based to a larger extent on Pavlovian or classical conditioning. The writings of B. F. Skinner (9, 10) serve as the theoretical reference point for the former, while Hull (11, 12) and Wolpe (13, 14) provide the foundations for the latter.

The study to be described can be identified with the Skinnerian or operant conditioning school of behavior counseling and therapy. Krasner (15: 62) interprets the Skinnerian point of view in therapy as an orientation, empirically based, which has "moved sharply in the direction of interpreting the therapist as one who manipulates and controls the therapy situation by his knowledge and use of learning techniques in a social reinforcement situation. This approach to psychotherapy research is implicit in verbal conditioning studies."

In a broader context, the verility of operant conditioning techniques in the interview process has been recognized by significant persons in the counseling profession. C. Gilbert Wrenn, for example, in his work, The Counselor in the Changing World, briefly describes several verbal conditioning studies and remarks that, "clearly, what a person says is shaped by what is said to him, and in accordance with lawful patterns" (16: 58).

The importance of verbal conditioning research is, therefore, reflected by the increasing number of empirical investigations, by a school of behavior counseling and



therapy based largely upon the results of verbal conditioning research and by a growing realization and recognition of the application of operant learning theory to the therapeutic and counseling process.

### Statement of the Problem

There have been three major attempts to review the verbal conditioning literature (8, 17, 18). A perusal of each reveals that many crucial areas still remain to be explored. Krasner (8: 165), for example, points to the need to investigate whether there is a hierarchy of behavioral cues with respect to degree of effectiveness. Salzinger (17: 81) also notes the lack of information concerning the effectiveness of reinforcing stimuli and further states that "we might hypothesize, for example, that reinforcers using more words are greater in amount and, therefore, in effect than those using fewer words. An experiment could be designed comparing the following reinforcers with each other: mm-hmm, yes, I see and I can understand that, in an interview situation." A review of subsequent literature revealed that there has not appeared a study designed specifically to investigate the existence of a hierarchy of reinforcing stimuli conditions.

Examination of the literature also revealed additional areas demanding study. One such area concerns the relationship between a subject's conscious awareness of being

conditioned and his resultant conditionability. In the words of one reviewer, "it is clear that this issue [subject awareness] is coming to assume an importance for some investigators which is comparable to that of conditioning itself" (18: 386).

Still another issue that presents serious methodological implications is that of the influence of a subject's base rate (the rate of emitting a specified class of verbal behavior in the absence of systematic reinforcement) on verbal conditioning. Greenspoon (6) and Matarazzo, Saslow, and Pareis (19) have examined this relationship and have formulated a tentative hypothesis. They believe that subjects manifesting a high base rate will emit relatively fewer conditioned responses than subjects initially manifesting a low base rate. They suggest that subjects with high base rates do not have the same opportunities to increase their response level under the influence of a conditioning treatment as do low base rate subjects; thus, a negative correlation between base rate and conditioning level results. Further research bearing on this hypothesis is suggested by these writers.

The stated need expressed in the literature to conduct systematic empirical inquiry into the forestated general areas prompted the execution of this study.

### Purposes of the Study

The principal purpose of this research study was to test the relative reinforcing value of commonly used stimuli on the production of self-reference statements in an experimental counseling situation. And as Salzinger (17: 75) has stated, "the problem of identifying events which are reinforcing [for verbal behavior] is for the most part an empirical one in which the experimenter can be helped partly by his own experience with conversation."

Selected for comparative study by this experimenter were the five following stimuli conditions:

1. "mm-hmm"
2. "mm-hmm" accompanied by a head nod and smile
3. "good"
4. "I see"
5. a short paraphrase; i.e., verbal reflection of self-reference pronoun, verb, and appropriate transitive material.

These stimuli conditions were verbalized by trained Es at times consistent with the operant conditioning model. Self-reference statements verbalized by the Ss served as the dependent variable.

The reinforcing value of the selected stimuli conditions was determined by (a) the increased frequency at which self-reference statements were produced, and to a lesser



extent, (b) the resistance of previously reinforced self-reference statements to extinction.

The essential purpose can be succinctly stated in the form of null hypotheses that were tested:

1. There is no difference among the five stimuli conditions relative to their reinforcing value.
2. There is no difference among the extinction effects associated with stimuli conditions.

Within the context of this experiment, precursory investigations, at the descriptive level, relating to both subject awareness and the relationship between base rate and conditionability were permissible. Therefore, one secondary objective of this research was to test whether greater conscious awareness on the part of the subject results in greater conditioning of the specified class of behavior. An examination of the relationship between the base rates at which the Ss emit self-reference statements and subsequent conditioning measures served as another secondary objective. The two stated principal hypotheses and the two secondary areas of investigation specified guidelines for the conduct of this research.

### Significance of the Problem

An experimental analysis of the effectiveness of commonly employed verbal reinforcing stimuli possesses several implications for psychotherapy and counseling. First, such

a study has been demonstrated to be of need. Two of the three reviews of the verbal conditioning literature, Krasner (8) and Salzinger (17), specifically, define this problem as one in which research is lacking and needed.

Consider further that in counseling and psychotherapy the most important activity is the interview, and in the interview the principal vehicles through which communication transpires are verbal. Strong (7: 660) has described the interview process as "reciprocal verbal behavior usually between two people. The counselor talks, then the counselee talks, then again the counselor, and so on. Generally, other behaviors such as nodding, smiling, and looking are liberally added to the on-going interlocking verbal behavior." If viewed in this way, new knowledge concerning the nature of verbal behavior is of vital importance to the interviewer.

Further, as Krasner and Ullmann(20: 4) have stated, "changing human behavior is the common purpose of all forms of psychotherapy." In spite of the stated objectives and theoretical orientation of the counselor, the verbal behavior of his client is being subtly manipulated. Patterson (21: 684), who is unquestionably not identified with the behavioral approach to counseling, admitted that "the techniques which the counselor uses may be considered as the operant conditioning of client's behavior in the interview." Recently, Truax (22) has shown that even Carl Rogers, the leading opponent of conscious manipulation of clients' behavior in counseling,



selectively reinforces the clients' behavior in directions of successful process outcomes as prescribed by client-centered theory. Therefore, if change and the use of operant methods are crucial aspects of the counseling interview, increased knowledge of the effectiveness of conditioning procedures relative to verbal operants should be welcomed by the profession. Within a behavioral context, this new knowledge can potentially be used by the counselor to effectualize the learning process, especially if possession of this knowledge enables the counselor to direct more effectively the course of treatment.

Significance must also be attached to the particular response class, self-reference statements, selected for study. Since the client, as a person, constitutes the principal subject matter in counseling and therapy, counselors, especially during initial stages, usually attempt to get clients to talk about themselves. Moreover, as Krasner (23: 603) has stated, "certain types of verbalization are considered therapeutic in and of themselves, because of their insight value." The production and maintenance of self-reference statements have relevance to both these points.

An empirical disclosure of the importance of self-reference statements has been provided by Rainy (24). He was able to demonstrate that characteristic shifts in the nature of self-reference statements emitted by clients were related significantly to outcome. Counseling cases deemed successful

manifested a shift from a preponderance of self-disapproving and ambivalent self-statements to approving statements during therapy. This shift was not apparent for unsuccessful clients. There were no conscious attempts to modify the direction of clients' self-reference statements in the study. However, the possibility is certainly present that such modifications can be actively affected by the counselor and, in turn, salutary outcomes realized. Such a possibility justifies interest in an investigation of the counselor's ability to influence the production of self-reference statements in a conversational setting.

The present study, because it utilized the operant conditioning model, permitted a rigorous examination of behavior in a context closely resembling that of an initial counseling situation. It represented an attempt to reach beyond the limitations of descriptive research and apply the proven methods of controlled experimentation to verbal behavior. Krasner (15: 61) has stated that "research in psychotherapy will not be as productive as it could be until the therapist can accept his role as an influencer of behavior and thus permit investigation of variables of behavior control. Within this context, new approaches and new techniques can develop." The present operant conditioning study was designed to investigate an important dimension of behavioral control so that the therapist can function more effectively in his role as a behavioral modifier and so that psychotherapy



and counseling can move one step further away from faith toward a scientific system.

### Definition of Terms

Operant conditioning.--Operant conditioning is an experimental process pioneered by B. F. Skinner. This process is predicated upon the empirically established fact that the presence of certain events (reinforcing stimuli) immediately following a behavioral response results in an increased probability that the response will be emitted again. The distinguishing feature of operant conditioning is that the administration of a reinforcing stimulus is contingent upon the subject's response. Operant conditioning prescribes the methodological strategy employed in this study.

Verbal conditioning.--Verbal conditioning has been defined by Krasner (25: 213) as the "systematic application of social reinforcements to influence the probability of another person emitting a specifiable verbal behavior." A verbal conditioning study is one in which the dependent variable consists of the S's verbal behaviors which are examined in relation to stimuli conditions provided by the E. The intent is to bring the specified verbal behaviors under the control of the E. Typically, Ss are not given a set of instructions to learn. They are placed in a situation or requested to participate in a task that demands the expenditure of verbal behavior. Then a stimulus (or stimuli) is



administered by the E to a previously selected class of the S's verbal behavior.

Self-reference statements.--Self-reference statements constitute the class of verbal behavior which the Es attempted to reinforce. These statements constitute a verbal response by a subject which describes him in some way, tells something about him, or refers to some affect he experiences (26: 248). Operationally, self-reference statements were defined as meaningful units of verbalization containing at least one of the following self-reference pronouns: "I," "me," "my," "mine," "we," "us," or "ours," when used in conjunction with a predicate. The thought unit is comparable to the grammarian's "independent clause." The verbalization, "I am majoring in elementary education and I plan to teach at the third grade level," constitutes, by definition, two self-reference statements. The choice of the unit described is in keeping with Skinner's (10: 27) admonition that a verbal operant should not be subjected to a purely formal analysis. That is, counting exclusively words, or more specifically, self-reference pronouns, may not represent a functional unit of behavior in the individual speaker. Moreover, Dollard and Mower (27) have shown that in the analysis of written behavior, the independent clause unit is more reliable than either the content analysis of single words or complete sentences.

The self-reference statement, as defined, possessed

the advantage of being relatively amenable to objective analysis and, at the same time, approximated a meaningful unit of behavior.

Free operant period and base rate.--Ss selected for participation in this study were engaged in an experimental interview session which consisted principally of three discreet temporal periods. The initial period of the interview was termed the free operant period. During this period, the E emitted a stimulus condition on a random basis; thus, self-reference statements were not under the influence of the stimuli under study. The S was "free" to produce the operant at his "natural rate." The natural rate as measured by the total number of self-reference responses is termed the S's base rate.

Conditioning period and conditioning level.--The second major segment of the experimental situation was the application of a stimulus condition by the E to the self-reference statements of the S. This period is the conditioning period. The total number of self-reference statements produced during this period defined the conditioning level.

Extinction period and extinction level.--Following the conditioning period, the E reverted to supplying the stimulus condition on a random basis. Theoretically, the absence of systematic reinforcement following a conditioned response should result in extinction; i.e., a diminution in the number of self-reference statements emitted. The



tabulation of the number of self-reference statements occurring during this period was labelled the extinction level. The special significance associated with the decrement in response rate is that it provides a valuable supplementary means by which the effectiveness and permanency of conditioning treatments can be evaluated.

Continuous reinforcement schedule.--In animal studies, Ferster and Skinner (28) have shown that, for a specific response class, the degree to which a behavior is conditioned and its pattern during extinction are functions of the rate and time intervals between reinforcements. Alterations in either the rate or time can produce markedly distinctive results. Various reinforcement patterns have been described by the authors and are collectively referred to as reinforcement schedules. This important variable was controlled in the present study through the uniform use of a continuous schedule of reinforcement. A continuous schedule is defined as the administration of reinforcing stimuli to every emitted response within the selected response class. However, as Krasner (15: 72-73) has pointed out, where there is a continuous flow of conversation, "the rate of reinforcement is rarely continuous." He states further that "what is taking place in situations requiring continuous verbalization, as in psychotherapy, is an intermittent reinforcement schedule, which is more effective, and more realistic, than a continuous reinforcement schedule." Therefore, the following

qualification must be made. Although the Es in this experiment attempted to administer the selected stimuli conditions on a continuous schedule, the findings of past investigations combined with the experience gained through the execution of the study being described, indicated that their efforts resulted in intermittent reinforcement.

Awareness level.--Awareness of the nature of the study was defined in the manner traditional to verbal conditioning experimentation. An S was classified as being completely aware if she could identify the contingent relationship between her reinforced operants and the controlling stimuli. Complete lack of awareness was demonstrated if the S failed to recognize at least one of the following conditions: (a) the repeated use of the stimulus condition, (b) the fact that the stimulus condition was being employed to encourage verbalization, or (c) the response class under study. Implied by the criteria of subject awareness is that awareness is not an either-or proposition but rather a matter of degree. Awareness level, then, denotes the degree to which an S reports knowledge of the stimuli response class contingency within the perimeters described.

#### Limitations of the Study

Generalizations concerning the relative effectiveness of the reinforcing stimuli under consideration have to be qualified due to factors relating to the sample selected and



the reinforcement schedule. The sample consisted of female college students enrolled in a teacher preparation program. This sample cannot be said to be representative of the general population at large. However, since most verbal conditioning studies have used either students enrolled in an introductory psychology course or psychiatric patients (8: 152), the use of undergraduate students in education extends the populations upon which conditioning phenomenon have been tested.

The fact that reinforcing stimuli have distinctive effects under different schedules of reinforcement also restricts the scope to which findings may be generalized.

The experiment was conducted within a quasi-conversation context in order to parallel as closely as possible the counseling situation. However, this type of setting presents methodological problems. Parenthetically, most investigators have avoided the problems inherent in a conversational context by presenting Ss with a highly structured verbal task. Most serious was the difficulty in achieving complete standardization of the E's responses. Despite didactic instruction and participation in pilot-training sessions, the degree of standardization common to animal studies and verbal conditioning studies utilizing highly structured tasks was not achieved. This undoubtedly attracted the presence of irrelevant and unspecified variables whose only contribution was to obscure the performance of variables under

study.

The quasi-conversational structure imposes still another limiting consideration. The Ss engaged approached the experiment with long and highly individualistic histories of verbal behavior. Resulting from past histories of reinforcement are thematic directions (topics of conversations) that their verbalizations are more likely to pursue. To an extent, the emittance of self-reference statements is a function of the thematic direction; that is, some conversational topics are more conducive to the emittance of self-reference statements than others. The only tool possessed by an E that can be used in an attempt to influence the production of self statements is one of the selected stimuli conditions, and it is applied in a period of time that compares unfavorably to a S's past history. The consequence is that Ss may discuss a theme at length that does not afford the E an ample opportunity to reinforce the selected verbal behavior. Conditioning effects, therefore, will not materialize for failure of the S to operate on the environment.

Finally, irrelevant sources of influence peculiar to the operant conditioning paradigm must be considered. Two in particular have been cited by Dinsmoor (29: 424). First, unspecified experimental effects occurring in time may be confounded with changes introduced by the E. (The presence of a control group would detect such temporal effects; however, little assistance would be offered as to their

explanation.) Secondly, confounding can result if the effects of previous conditions within the session have not had time to dissipate. An example of this might be a failure to achieve a valid base level of performance because Ss have not sufficiently adjusted to the novel setting.

Despite the difficulties and serious threats of contamination, the potential benefits that can be derived from knowledge gained through experimentation in a quasi-counseling setting far outweighs the stigma associated with experimental looseness.



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## CHAPTER II

### RELATED RESEARCH

In 1958 there were approximately thirty-five verbal conditioning studies based on the operant conditioning paradigm reported in the literature. Since that time, the number of studies performed and published has increased to several hundred and they have similarly increased in their complexity and scope. For the purposes of this paper, only research with direct implications for the proposed study will be reviewed.

#### Studies of Verbal Conditioning in General

Historically, verbal conditioning research grew out of a marriage between animal-based Skinnerian operant conditioning and clinical interest in verbal behavior. As previously noted, the first significant study is considered to be that of Greenspoon (1) which demonstrated that the number of plural nouns emitted by "unaware" experimental subjects could be significantly manipulated through the use of verbal ("mm-hmm" and "huh'uh") reinforcements. Many attempts to replicate and extend these findings soon followed.

The growing body of research in verbal conditioning has been reviewed several times: Krasner (2), Salzinger (3), Greenspoon (4), Williams (5), and London and Rosenhan (6).



Despite the common label, much variability is seen among the studies. Krasner, for example, used the variability between research settings, response classes, reinforcing stimuli, populations, examiners, controls, and length of experimental sessions as a means to classify studies within the field. Similar distinctions have been made by the other reviewers. Their papers, however, clearly demonstrate that verbal behavior is amenable to conditioning by the fact that the majority of studies reported have achieved positive results.

### Verbal Conditioning, Psychotherapy and Counseling

Ullmann and Krasner have recently assumed the position that verbal conditioning has progressed from a research technique to a type of treatment (7: 213). One of the first studies illustrating the use of verbal conditioning as the principal device for promoting desirable change in clients was that of Williams (8). This study demonstrated that significant changes in the verbal behavior of clients could be achieved in a psychotherapeutic situation. Dinoff, Horner et al. (9) effectively used verbal conditioning to modify the verbalizations of schizophrenic patients in a group therapy situation. Ayllon and Haughton (10) also report the usefulness of verbal conditioning techniques in reducing undesirable verbalizations in schizophrenics. Ullmann, Krasner, and Edinger (11) and Sommer, Whitney, and Osmond (12) successfully verbally conditioned schizophrenic subjects

to provide common associations to word association tests. (Disturbed verbal associations are highly symptomatic of schizophrenia.) However, both studies failed to obtain significant generalization of common associations outside of the test situation.

Verbal conditioning when used as a therapeutic tool has been shown to be capable of promoting change other than the modification of verbal behavior. Ullmann, Krasner, and Collins (13) conditioned emotional words and found a significant relationship between conditionsability and clinically meaningful changes as measured by behavior in group therapy. Similarly, Ullmann, Weiss, and Krasner (14) report the effective use of verbal conditioning to promote recognition of threatening stimuli. In a study described by Krasner (7: 221), it was shown that by differentially rewarding pleasant and unpleasant emotional words, client anxiety, as measured by galvanic skin response and selected items on the MMPI, was reduced. Rickard, Digman, and Harner (15) used verbal conditioning in an individual case study by rewarding nondelusional responses and mildly punishing delusional responses. There was a reduction in delusional responses, although this effect was not generalized in the presence of other therapists.

The research summarized above suggests that verbal conditioning can be used in certain instances as a therapeutic device to modify first the verbal productions of the



client and, as a consequence, other forms of measurable behavior. Whether verbal conditioning can stand alone as a viable psychotherapeutic technique waits the verdict of future research. However, at very least, verbal conditioning provides a research paradigm by which systematic explorations of variables operating in interpersonal situations can be conducted.

Verbal conditioning clearly holds promise of being a valuable technique for counseling. If, as Williamson (16) suggests, the objectives of counseling in schools are bound up with those of education in general and serve to influence the pattern of development achieved by students in accordance with societal welfare, then the conscious modification of attitudes and opinions becomes a function of counseling. Significant changes in these classes of behavior have been shown to result from the conditioning of verbal behavior. Verplanck (17) has shown that the behavior of stating opinions can be strengthened using verbal stimuli as reinforcers. Ekman (18) successfully modified attitudes toward capital punishment. In a study designed to produce change in attitudes toward self, Babbitt (19) reports the successful conditioning of positive self statements for a treatment group manifesting initial "intermediate dissatisfaction" with themselves. Additional studies have been undertaken in which attitudes toward education (20) and medical science (21) were demonstrated to be amenable to conditioning techniques.

Failure to modify opinions has been cited in research conducted by Sullivan and Calvin (22) and Ulrich (23).

In counseling situations, Krumboltz and Thorenson (24) and Krumboltz and Schroeder (25) found that information-seeking behavior could be increased through systematic verbal reinforcement. Moreover, Ryan and Krumboltz (26) were successful in reinforcing both deliberation and decision responses and, further, presented evidence that conditioned responses generalized to a projection type of problem in a classroom setting. Staats et al. (27) and Nuthmann (28) working with "sociability" and "acceptance of self," respectively, produced significant changes in subject responses to personality test items as a result of verbal conditioning procedures.

As an instrument to modify psychotic symptoms, verbal conditions hold much promise to the clinical professions. Relative to school guidance and counseling, verbal conditioning experimentation is not only being attempted but also has been shown to be effective in achieving specific goals common to most counseling approaches. However, despite the extension of verbal conditioning practices in counseling and therapy, basic questions, such as those asked in this research, still remain to be answered.

#### Differential Effectiveness of Verbal Reinforcers

Reinforcing stimuli can be classified by three types:



verbal, gestural, and mechanical. Since this study dealt primarily with verbal stimuli conditions (the exception being "mm-hmm accompanied by a head nod and smile" which is a verbal-gestural combination), attention is focused primarily upon research investigations which employed multiple verbal reinforcers.

The most widely used verbal reinforcers in the literature are the "mm-hmm" sound and "good" (2). The first hint that E verbalizations possessed different reinforcing value was observed in the early Greenspoon study (1).

Using "mm-hmm" and "huh-uh" as reinforcing stimuli, Greenspoon discovered that "mm-hmm" produced an increase in the frequency of both plural and nonplural responses while "huh-uh" resulted in a decrease in plural responses and increased nonplural responses.

Buss and Durkee (29) reported the combination of "right" and "wrong" effective in conditioning intensely hostile verbs while "good" failed to demonstrate effectiveness. In a more recent study, Meyer and Crum (30) compared a treatment consisting of the positive reinforcement of animate nouns by "mm-hmm" and the negative reinforcement of nonanimate nouns with "huh-uh" with a treatment consisting of only positive reinforcement by "mm-hmm." The combination positive and negative treatment was shown to be more effective. It appears that verbal conditioning with combined positive and negative reinforcement achieves more positive results

than the use of positive reinforcement alone.

Turning to studies that have attempted only the positive reinforcement of verbal behavior, Wickes (31) used the verbal cue of "good," "fine," and "all right" (as well as several nonverbal reinforcers) and found them to be effective relative to increasing the number of verbal "movement responses" on an ink-blot test. This researcher, however, did not design the experiment so that the relative efficiency of these reinforcers could be determined. Hildum and Brown (20) compared "good" and "mm-hmm" and their results indicated that E verbalization of "good" significantly increased positive attitudes toward an educational philosophy while "mm-hmm" had no effect. Hartman (32), experimenting with both schizophrenic and normal subjects, found both "good" and "good combined with a head nod" to be effective in conditioning "I" and "we" pronouns but no difference could be demonstrated between these reinforcers. In a similar study, conducted by Daily (33), "good" and "mm-hmm" were compared and found to be equally ineffectual in conditioning "I" and "we" pronouns. Adams, Butler, and Noblen (34), employing psychology students and using the "I" and "we" response class, found no difference in either conditioning or extinction effects between mild, affirmatory reinforcement (like "fine" or "good") and psychoanalytically derived interpretive statements. However, interpretive statements were associated with long latency periods between responses, suggesting that they



may be noxious stimuli "as most Ss became quite emotional and annoyed during the acquisition phase [conditioning period] of the experiment."

Timmons et al. (35), replicating the procedures of the Adams, Butler, and Noblen study with a schizophrenic population, found that the use of mild, affirmative verbal reinforcement realized a significantly greater conditioning effect but psychoanalytically derived interpretations resulted in more pronounced extinction.

Of particular relevance are studies utilizing multiple verbal stimuli in a setting resembling that of a counseling or therapeutic interview. In such a setting, Adams and Frye (36) tested the effectiveness of interpretation statements, hostile statements, reflection statements (paraphrase), and E utterances, such as "mm-hmm," which were described as minimal social reinforcement. Their results indicated that interpretive statements and minimal social reinforcement increased personal reference statements while reflections and hostile statements decreased personal references. Powell (37), in an interview situation designed to elicit self-reference statements, used three types of reinforcing statements: approval-supportive, reflection-restatement, and open-disclosure. The three types of statements were shown to be differentially effective in influencing S's positive and negative self-reference statements. Specifically, open disclosure statements were effective for both positive and

negative; reflection-restatements were effective with only negative self-reference statements; and approval-supportive were ineffective for both.

Merbaum (38) also attempted to use the interview context to examine the relative effectiveness of three "styles of qualitative recognition" given to S's responses. The three styles of recognition consisted of: noncommittal expressions, such as "mm-hmm" and "uh-huh"; mild positive expressions, such as "good," "yes," "I see," "I understand," etc.; and direct restatement. Affective self-reference statements constituted the response class under study. Significant results were achieved with the restatement treatment only. In a subsequent study, Merbaum and Southwell (39) closely examined the effects that the paraphrase has on self-statement production. Distinguishing between the type of restatement where the E interprets or modifies the S's response and the type consisting of a literal restatement of response, these investigators found the former to be more effective. Noblin, Timmons, and Reynard (40) described an experiment in which standard interpretive statements were compared to interpretations that were unrelated to the contents of S's verbalizations and found that the latter could act as a reinforcer. In a later paper, Waskaw (41) reported working with reflection of feeling and reflection of content. Her research indicated that the treatment group reinforced for content emitted more content responses; no discernible



pattern was noticed for the receiving of the reflection of feeling.

Consistent evidence suggesting a hierarchy of reinforcing stimuli is lacking in both studies utilizing a highly structural task and studies conducted in an interview setting. It should be noted further that the interview studies frequently assumed that specific stimuli, such as "good," "fine," "I see," etc., are equally efficacious and, therefore, can be combined under the single rubric of a global response. On the basis of available evidence, this assumption does not appear tenable.

The question of the relationship between amount of reinforcement and conditioning effect has been raised by Salzinger (3: 81). As previously stated, Salzinger has hypothesized that reinforcing statements containing more words should have greater reinforcing value than those containing fewer words. He states, for example, that "I see" should be more potent as a reinforcer than "mm-hmm" (42). The studies of Hildum and Brown (20), Powell (37), and a study directed by Verplanck (17) lend a modicum of support to this hypothesis. In the latter, the investigator was highly successful in conditioning statements of opinion in a methodologically difficult nonlaboratory setting with statements of agreement ("I agree" or "that's so") and paraphrasing S's verbalizations. Verplanck found that the more general class of reinforcement; i.e., paraphrasing, produced



greater variability in results than did the more limited class of agreement. Unfortunately, studies have not been designed to test specifically Salzinger's hypothesis nor has any one study used a sufficient number of verbal reinforcing statements to generate strong inferences.

In his 1959 paper, Salzinger (3: 77) commented that "comparison of the effectiveness of different reinforcements in any one experiment has been somewhat rare." More recently, Powell (37: 13) wrote that "the question of the differential effects of various experimenter responses on subjects' verbal behavior has been largely ignored in conditioning studies." This review corroborates these statements. Although the studies reviewed indicated that verbal reinforcements, generally, can produce positive conditioning effects, additional research is needed to determine their relative efficiencies.

### Self-reference Statements

The literature is replete with studies that have utilized specific self-reference pronouns, such as "I," or "we," as a response class (32, 33, 34, 43, 44, 45, 46, 47, 48, 49). The great majority of these studies worked with these response classes within the context of what has come to be known as a "Taffel-type task" (45). A past-tense verb and six pronouns (I, we, you, he, she, they) are usually typed on index cards and presented to the S. The S is then asked to make up a sentence using the past-tense verb and

any one of the six listed pronouns. Traditionally, most investigators have chosen both "I" and "we" to reinforce. Recently, the use of specific pronouns, such as those used in the Taffel technique, has been severely criticized by Greenspoon (4: 546) for not representing a true operant conditioning situation because provisions for generalizations within a class of responses are not made. Interest has now turned toward the use of more molar types of responses, such as self-reference statements, in a less-structured setting as opposed to the earlier interest in specific pronoun responses.

Self-reference statements have been shown to be influenced by E reinforcements in the studies of Salzinger and Pisoni (50) and Adams and Hoffmann (51) as well as those studies previously cited (28, 36, 38, 39). Other research seems to demonstrate that personality variables and types of reinforcing stimuli also relate to the conditionability of self statements. Sapolsky (52), for example, reports that production of self-reference statements by verbal reinforcement is related to subject-experimenter need compatibility. Babladelis (53) discovered a negative relationship between the personality trait of autonomy and conditionability.

When self-reference statements are further defined in terms of positive and negative, interaction effects become apparent. The frequency of negative self-reference statements was shown to be under the control of experimenter



reinforcements by Rogers (54); however, positive statements did not show a conditioning effect. Significant post-treatment changes in manifest anxiety and emotional adjustment were also shown to be non-significant in this experiment. Babbitt (19), experimenting with both positive and negative statements relating to self, was only able to condition the positive response class and then only for one treatment group. Powell (37), using three different types of reinforcement on positive and negative self-reference statements, also realized mixed results.

Although not extensive, studies employing the self-reference response class have shown that the controls and rigor characteristic of verbal conditioning can be applied to material that has relevance for the therapeutic and counseling situation. However, the ambiguity surrounding the differential effects of various means of reinforcing self-reference statements remains to be resolved.

### Conversation Control

The Verplanck study (17), previously noted, has been frequently cited to illustrate the appropriateness and effectiveness of verbal conditioning in a conversational context. In this study, student Es engaged Ss, mostly college students, in one-half hour of "casual" conversation. The time was divided into three ten-minute segments for the purpose of obtaining base level, conditioning and extinction measures.



Es were properly restricted to the use of verbal agreement or the paraphrase in their attempts to condition and extinguish the opinion statements of Ss. Both types of verbal stimuli were observed to be effective.

A series of failures to replicate the Verplanck findings, however, has called to question the ability to employ experimental operant procedures effectively and rigorously in a social surrounding. Azrin et al. (55), for example, have described several efforts to reinforce opinion statements in conversation. In their first attempt, a faithful replication of Verplanck's work, it was found that only two of the nineteen student Es were able to follow the prescribed procedures. Moreover, there was evidence in some instances of partial or complete fabrication of data. In another attempt, four experienced Es were used but not one could complete the experiment. "In the absence of any reaction by the four Es, however, all of the twelve Ss terminated the conversation within ten minutes by leaving the room where the conversation was taking place" (55: 29). In a replication involving 151 student Es, Ulrich (23) found that only one in five was able to subscribe to the experimental procedures and still complete the experiment. An analysis of the data obtained from the completed sessions indicated an absence of significant conditioning and extinction effects.

Conditioning studies implemented in a setting resembling a counseling interview frequently report that E interjections were necessary to maintain the

conversation. In both the Ryan and Krumboltz (26) and Krumboltz and Thoresen (24) studies, for example, it was necessary for the Es to give cues, in the form of questions, to maintain S verbalization during the sessions. Such E interjections are somewhat at variance with the traditional operant conditioning experimental model. Strong (56: 666) examined some of the attempts at conversational control and wrote that the "results indicate that in order to successfully carry out verbal conditioning, it is necessary to give the Ss prior instructions on how to behave or present them with recurring stimuli, either standard test stimuli or E participation." It can be concluded that the control of conversation in either a casual or interview setting abounds with methodological difficulties not found in the highly structured task setting typical of most verbal conditioning research.

#### Subject Awareness and Verbal Conditioning

As noted previously, the relationship between subject awareness and resultant conditionability is an issue of paramount importance to investigators interested in verbal conditioning. Theoretically, to the extent that a subject becomes aware of the reinforcer and desired response, his behavior becomes a product of discriminant learning and not operant conditioning in the sense of being an analogue of animal conditioning. One of the earliest pronouncements on this subject was made by Thorndike (57: 62) who stated that a subject could



be influenced by a reinforcement without being aware of either the response under conditioning, the reinforcement, or both. The Greenspoon experiment (4) and many others that followed are cited as evidence that verbal conditioning occurs in the absence of subject awareness. Krasner (2) reviewed thirty-one studies and found only two that reported negative results for unaware subjects.

Several verbal learning studies, however, led many to doubt the validity of the conditioning without awareness findings. In one, Postman and Jarrett (58) concluded that their results showed "only little reliable evidence for learning without awareness." Later, Philbrick and Postman (59) reported that individuals in the "aware group" performed better on learning tasks than those in the "unaware group." Such results prompted Adams (60) to undertake an extensive review of learning and verbal conditioning studies in 1957. Adams concluded that evidence for conditioning without awareness is equivocal and pointed to the variety of means and definitions by which awareness is measured in these studies as one of the sources of ambiguity. He especially called attention to the fact that alternate explanations, bordering on subject awareness, could justifiably be offered to account for conditioning. The correlated hypothesis is such an alternative which the vast majority of investigators have failed to consider. Ss participating in the research may formulate a hypothesis related to the response-reinforcement



contingency. This hypothesis, although technically incorrect, may account for increased emittance of the response class in question. An example would be an S who believed that the purpose of the experimentation was to obtain information about himself. Operating on this hypothesis would likely lead to the increased production of a response, such as self statements, and yet this S would not be classified as being aware. Further, as Krasner (61) has stated, verbal conditioning research is particularly plagued by the difficulty of reliably assessing awareness because of its reliance on subject self-report.

Recently, direct challenges have been leveled specifically against the conception of verbal conditioning without awareness. Based on his experimentation, Dulaney (62) concluded that awareness on some level is always a factor where verbal conditioning occurs. He showed that the majority of Ss who were conditioned perceived the E's stimulus as a cue to pursue the same topic. Spielberger and DeNike (63), Spielberger, Levin, and Shepherd (64), and DeNike (65) found that unaware subjects did not significantly differ from controls in the rate of plural nouns, "I" and "we" pronouns, or human responses emitted, respectively. These authors suggested that some degree of conscious meditation was necessary for positive results to occur. Levin (66) and later Spielberger and Levin (49) administered four questions to subjects after completion of verbal conditioning sessions that were comparable to those

frequently employed to measure awareness. Then additional questions of a more specific nature, designed to elicit further information, were asked of the Ss. When awareness, as determined by responses to the first four questions, was used, unaware Ss were shown to have been conditioned. However, on the basis of the latter and more intensive questioning, their findings suggest "that aware Ss acquired the conditioned responses whereas unaware Ss showed no more tendency to do so than did the controls." Matarazzo, Saslow, and Pareis (67), using a highly refined scale of awareness, also demonstrated that conscious awareness was concomitant of conditioning effect. Greenspoon (68) replied to these challenges by suggesting that such results are a function of the procedures used to assess awareness. Specifically, the probing nature of the extended questioning gradually leads Ss to awareness.

Commenting upon the appropriateness of post-experimental assessment, Sarason (69: 303) notes that knowledge abstracted from Ss does not permit a definite conclusion about their awareness level during conditioning. Locke (70) has extended this argument by pointing out that, even if subject awareness seems to correlate with conditionability, it is still necessary to determine their intentions, during conditioning, relative to providing the correct response. Krasner (61: 606) concluded a brief review of research which employed traditional post-experimental awareness tests by stating that,



when "taken by itself as a verbal report, 'awareness' is a concept of dubious validity in verbal conditioning studies."

Several attempts have been made to treat awareness as an independent variable within an experimental context. In a study designed by Krasner, Weiss, and Ullmann (71), one-half of the Ss were provided with pre-experimental cues that lead them to the response-reinforcement contingency. It was found that induced awareness resulted in a reduction of the reinforced behavior (emotional words) during the conditioning segment of the experiment. In a later study, Ekman, Krasner, and Ullmann (72) manipulated awareness in conjunction with two different instructional sets. One group was instructed that verbalization relating to personal problems was to be measured by the experiment, while another was told that the purpose was the measurement of client empathy. Awareness was induced in one-half of the Ss in each group by telling them that the E would respond with "mm-hmm" every time the behavior under study was emitted. Aware Ss that received personal problem set manifested a reduced responsiveness relative to the production of emotional words, the actual dependent variable. A significant increase in rate of emotional word production was seen in the induced awareness group that experienced the empathy set. These researchers interpreted their results as "evidence that awareness can either facilitate or inhibit conditioning, depending upon S's set."

Two points seem to emerge from this brief review.



First, the role of awareness in verbal condition is complex and partially a function of research design and instrumentation. Further, as an issue, it is far from being resolved. Secondly, the influence of S awareness should be entertained, even if only on a descriptive post-facto basis, in verbal conditioning inquiries.

### Base Rate and Conditionability

Greenspoon (1) first called attention to a possible relationship between rate of responding during the initial free operant period and subsequent conditionability. Employing plural nouns as the reinforced operant, he commented upon the fact that Ss' emitting a large percentage of plural nouns during the initial period did not increase to any great extent during conditioning. Salzinger and Pisoni (50) examined this possible relationship in greater detail in a following investigation. They discovered that affect self-reference responses during the free operant period were correlated ( $\rho$ ) with the number of similar responses occurring in the conditioning period. A correlation of .46 was reported for the experimental group and .85 for the control group. Although the latter is larger, there still appears to be a correlation between base rate and conditioning level. The authors further remarked that low base rate subjects appeared difficult to condition. Even greater attention was afforded this relationship in the experiment executed by Matarazzo, Saslow, and

Pareis (67). Their study confirmed that significant correlations exist for plural nouns and human responses. However, when correlations were computed between the subject's base rate and conditioning measures, they were found to be near the zero level for groups that were successfully conditioned. For unsuccessful groups, negative correlations were obtained. Examination of both sets of data seems to indicate that the initial magnitude of the base rate may be the significant factor influencing results. On the basis of their analysis, these researchers tentatively hypothesized that a high initial base rate has a limiting effect on opportunity for improvement. The need to conduct further research bearing on this hypothesis was emphasized by the researchers.

Clearly, a review of the literature relating to the relative effectiveness of commonly used verbal reinforcing stimuli, subject awareness and conditionability, and the relationship between base rate and conditionability indicated the need to conduct further investigation and served to justify the experiment to be described.

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### CHAPTER III

#### METHODS AND PROCEDURES

The experiment to be described was conducted in facilities provided by the School of Education, University of Massachusetts, and was executed in an eleven-week period during the fall semester of 1966. This chapter contains a summary of materials and procedures employed in the study.

#### Subjects

The experimental participants were randomly selected from an available sophomore class entitled Directed Classroom Observation. The class met in two separate sections for one period a week and, although a basic requirement for elementary education majors, it carried no course credit. A total of 140 students (138 females and 2 males) were present at the time that cooperation was solicited.

In an oral presentation the student population was told by this writer that their help was needed to assist in the training of high school guidance counselors. Specifically, one hour of their time was being requested to serve as a client in a counselor training interview. Financial remuneration or "extra credit" was not mentioned. However, the presentation was structured so as to convey the impression that their cooperation was expected; rather than asking



for volunteers, students were requested to indicate an inability to participate. Students were then asked to complete a standard course schedule denoting convenient times for participation in the training activity. Of the 140 students, three indicated a desire not to participate. The two males were also excluded from further consideration since the presence of one or two males in the final sample would tend to place restrictions on the generalizations derived from experimental findings.

From the remaining 135 female students, 72 were randomly selected to comprise the sample. An additional twelve students were randomly drawn for the purpose of obtaining a reserve sample. It was necessary to utilize two Ss from the reserve sample to compensate for one session in which the E was improperly instructed as to the stimulus condition to be administered and for another interview in which the E failed to observe a visual cue and became disoriented during the session. The sample Ss ranged in age from eighteen to forty-six with the median age calculated at nineteen years.

Runquist (1: 534) has recently concluded that the more knowledge possessed by the S relative to the nature of the experiment, the more likely it is that conditioning will occur. It can be assumed that only minimal knowledge of operant conditioning was possessed by this sample, thus making the group highly suitable for participation.

Approximately one week previous to the scheduled

appointment, Ss received through the mail a letter signed by the Assistant Dean of the School of Education (see Appendix A). Essentially, the letter thanked the Ss for their interest in the counselor training program and provided details relative to their scheduled appointments. This letter was soon followed by a brief second mailed reminder. Finally, most Ss received a phone call the evening preceding the interview, reminding them of the engagement. Telephoning Ss was found to be a helpful procedure in that it partially alleviated the most troublesome problem confronted during the conduct of the research--failure of Ss to report.

#### Experimenters and Experimental Personnel

To insure that the findings were not an artifact of the confounding of a single E with the conditions of the experiment, multiple Es were used. Specifically, three males enrolled in the School of Education's graduate guidance program served as Es. One ( $E_1$ ) was thirty-six years of age and completing work on his doctoral dissertation (a verbal conditioning study). He also possessed considerable public school guidance experience. The remaining two ( $E_2$  and  $E_3$ ), each twenty-four years of age, were master's level guidance students with relatively modest actual counseling experience.

In addition to the Es, three undergraduate students and one graduate student were employed as research assistants. The duties of the assistants were primarily

telephoning Ss, greeting Ss and escorting them to the counseling room, and monitoring and operating the recording equipment during an experimental session. In addition, two assistants were used in the evaluation of the awareness tests.

### Treatment Conditions and the General Design

A 3 x 6 factorial design was adopted for use in the experiment. The Es constituted three levels of the experimenter variable, while the five stimuli conditions and a control condition comprised six levels of the stimuli conditions variable. The levels of the stimuli conditions are restated below:

1. S<sub>1</sub>--"mm-hmm"
2. S<sub>2</sub>--"mm-hmm" accompanied by a head nod and smile
3. S<sub>3</sub>--"good"
4. S<sub>4</sub>--"I see"
5. S<sub>5</sub>--short paraphrase of self-reference pronoun, predicate and necessary transitive material
6. S<sub>c</sub>--control condition

The design permitted eighteen separate treatment combinations (cells). The seventy-two randomly selected Ss were randomly assigned to one of the eighteen treatment combinations. Thus, each stimulus condition group contained twelve Ss; each E treatment group consisted of twenty-four Ss, and four Ss experienced each treatment combination. An individual S was exposed to only one E and one stimulus.



The design as implemented in the study is somewhat limited in that strict randomization was not employed in the temporal sequence assignments. The difficulties encountered in attempting to match the course schedules of Es and Ss plus the frequent necessity to postpone experimental sessions made such a procedure impractical. However, care was taken to "scatter" the assignment of treatment combinations throughout the duration of the experiment so that a random condition could be approached.

#### Preliminary Experimentation

A pilot study consisting of fourteen sessions was conducted prior to the actual experimentation (2). With one exception, the Ss for this study were volunteers attending a junior college in the vicinity (3). The pilot study served two functions. First, it provided a test of the originally planned experimental proceedings. And as a result of the pilot experience, several procedural modifications were made (4). In addition, the preliminary sessions served to train both Es and research assistants. Es practiced their roles, and the assistants familiarized themselves with the operation of the recording and monitoring equipment.

In conjunction with the pilot sessions, three didactic training meetings were scheduled. In these meetings, procedures were discussed and acted out. An objective of both the practice and didactic sessions was to standardize,

as much as possible, the performance of the Es during the experiment. Such was in keeping with the suggestion, offered by Holz and Azrin (5: 805) to minimize the role of the E whenever possible so as to minimize interactive effects with the principal conditions of the experimentation.

### Setting and Apparatus

The investigation was conducted in two adjacent rooms located in an area which permitted great privacy. One of the rooms, the counseling room, was adequately furnished and served as the site for the actual experiment. The E and S sat facing each other at a table located in the center of this room. Present in the counseling room, but hidden from the S's view, were two microphones. One was attached to a dual-track tape recorder which was located in the adjacent room. The other led to a second recorder also located in the next room. A large, luxuriant plant was situated behind and above the left shoulder of the S. Concealed in the plant's foliage so that they were observable only to the Es were two small visual cues, slightly smaller than Christmas tree bulbs. One of the visual cues was red--the period cue--and served to denote various phases of the experimental session. The second cue was green--the stimulus cue--and was used as a signal to the E to emit the stimulus condition under study.

The recording and monitoring of the session took place in the room adjacent to the counseling room. The

sessions were recorded on a dual-track tape recorder which permitted the operator simultaneously to record comments and technical notation during the session. A second recorder, to which earphones were attached, was used to monitor the conversation in the next room. The visual cues, hidden in the plant, were activated by two doorbell buttons mounted on a control panel in the monitoring room. The visual cues were duplicated on the control panel. Illumination of both the concealed cue and the same color control panel cue would result if a doorbell button was depressed.

In addition, an accurate timing device with a muted alarm, a stop watch, and a schedule of random time intervals were available. The equipment and materials were so situated that they could be used efficiently by a single assistant during a session. As an extra precaution, however, a second assistant was usually present. There were no equipment failures during the course of the experiment.

### The Experimental Session

Ss were met by an assistant or the E and escorted to the counseling room. Once in the room, the experimental session was considered to be under way. The session was divided into five discreet phases: (a) the opening phase with no fixed time limit, (b) a free operant period of six minutes' duration, (c) the conditioning period of six minutes' duration, (d) an extinction period also six minutes in



length, and (e) the oral administration of the awareness test. The total time expended for a typical session was slightly less than one-half hour.

Opening phase.--The functions served by the initial phase of the experimental interview were the establishment of rapport between S and E and the impartation of procedural instructions to the S. In an effort to subscribe to the standard verbal conditioning format of not providing a learning set and also to protect the awareness dimension, the experiment was conducted under the guise of being a counselor training exercise. Subjects were not told that the session was being recorded since such knowledge could tend, in some instances, to inhibit verbal flow. The instructions given to the Ss were highly specified; however, each E was permitted some flexibility in the actual wording and delivery. (The complete instructional model used by the Es is presented in Appendix B.) Briefly, an S was again told that the session was a training exercise and that the purpose was to provide the E with practice in listening. It was explained that the S could assist the E by talking about any subject or subjects of her choosing for approximately fifteen minutes. During the prescribed time, the S was repeatedly warned that the E would not ask or answer any questions. Upon the complete delivery of the instructions, the E would ask the S for her reactions to the proposed format. If the S did not indicate a readiness to begin, the E

would engage the S in casual conversation and eventually restate the salient points in the instructions. When, in the opinion of the E, the S appeared acclimated to the setting and task, she was again asked if she were ready to begin. A negative reply resulted in a repetition of the conversational procedures. A positive reply served as a cue to the monitoring assistant to activate the timing device and the period cue which notified the E that the free operant session was under way.

Free operant period.--The purpose of the free operant period was to obtain for each S a base rate which was used to assess the magnitude of conditioning. During this six-minute period, the E emitted only the stimulus condition under study at random intervals (6). The random intervals were specified by the momentary illumination of the stimulus cue which was controlled by the monitoring assistant. A stop watch and a table of random intervals were used by the assistant in this operation. The time intervals ranged from ten to forty seconds with a mean of twenty-five seconds. Es were not required to emit the stimulus condition during the middle of a long awkward pause. At the termination of the period, the muted alarm on the timing device was sounded in the monitoring room, thus providing a record of the transition on the second tract of the tape. The period cue was then activated by the assistant, informing the E that conditioning was to be attempted.



The conditioning period.--In this period the E attempted to respond immediately, with the selected stimuli, to every self-reference pronoun emitted by the S. Experience gained from the pilot investigation convinced the research staff that it was impractical for the E to attempt reinforcement of self-reference statements as previously defined. Attempts to reinforce self-reference statements during the preliminary investigation resulted in the E having to wait and determine if the S's verbalizations were valid self-reference units. Such delays have been repeatedly shown to have a retarding influence on conditioning (the gradient of reinforcement). In practice, the immediate E response to self-reference pronouns resulted in occasional instances where a self-reference statement received two stimuli or the emitting of a self-reference pronoun not followed by a predicate, etc., received the stimulus condition.

At the termination of the six-minute period, the period cue signalled the start of the extinction period.

The extinction period.--During this period, the E attempted to extinguish the rate of self-reference responding by reverting again to supplying the stimulus condition on a random basis as prescribed by the stimulus cue. This period was similar in operation to the free operant period. The only difference was that during extinction Es were instructed to hesitate momentarily in providing the stimulus if the presence of the stimulus cue corresponded with the



emitting of a self-reference pronoun by the S.

The control group.--The twelve members of the control group received the S<sub>2</sub> stimulus condition ("mm-hmm" with a head nod and smile) during the three principal periods, only it was administered throughout on the basis of a random schedule. It was assumed that the random stimuli had a minimal effect upon the production of self-reference statements.

Restrictions placed on Es.--During the course of the three periods, the Es were confined to emitting only the stimulus condition assigned to the session. Exception had to be made, however, in the case of long pauses where the S was manifesting noticeable discomfort and, in the opinion of the E, the session was in danger of having to be aborted. In such an instance, the E was permitted a non-directive probe such as: "Why don't you talk about anything that comes into your mind." Such probes were necessary in approximately 20 per cent of the sessions.

The awareness test.--Upon completion of the extinction period, the Es asked Ss if they would answer three questions. The questions, designed to establish the S's level of awareness during the experimental session, represented a modification of Matarazzo's et al. test (7). The three questions were as follows:

1. What do you think was the purpose of this interview?
2. What evidence do you have for this?

3. Was there anything that you noticed about either yourself or myself during the interview?

The E asked each question in turn, waited until the S had completed her response, and followed each response with the single additional probe: "Anything else?"

### Measures and Coding Procedures

As previously expressed, the number of self-reference statements emitted during the free operant, conditioning, and extinction periods constituted the base rate, conditioning level, and extinction level, respectively.

Coding self-reference statements.--Upon completion of the seventy-two sessions, the number of self-reference statements were tabulated and recorded for each of the periods. The work was accomplished by this writer and one of the experimenters ( $E_1$ ), who possessed a recondite knowledge of verbal conditioning phenomena. Each tape was replayed in thirty-second segments and each rater independently counted the number of self-reference units emitted during a segment. Discrepancies that could not be immediately accounted for were resolved by replaying and reanalyzing the portion of conversation in question.

The basic response measure was the self-reference statement, as defined in Chapter I. In addition, the following specific criteria were used throughout the counting process:

1. If a session had been aborted because the S could not tolerate the lack of verbal intercourse, zeros were recorded from the moment of termination to the scheduled end of the interview. (This was necessary for three sessions; two were control interviews, and the third was in the S<sub>2</sub> treatment group.) It was felt that such a procedure was justified on several grounds. First, an aborted session reflected significant behavior. Specifically, it represented a failure of either the experimental proceedings or the stimulus condition to exercise control over the S's conversation. Such failures could neither be ignored nor compensated for through substitution. Secondly, there was a statistical consideration. By representing absent data with zeros, the within treatment combination (cell) variance is inflated, thus promoting a more conservative test of significance; i.e., decreasing the possibility of committing a Type I error.
2. Utterances consisting of a self-reference pronoun and a transitive verb that were not completed were not counted as a response. For example, an arrested verbalization, such as "I feel . . .," fails to comply to the complete thought unit criterion.
3. The implied use of self-reference pronouns in a meaningful unit of verbalization was also not considered



a valid response. A case in point was the statement: "Am really not sure what to talk about," where "I" was implied. Increased objectivity in scoring was the basis for this decision.

Dependent variables.--Calculated conditioning scores (SC) and extinction scores (ES) were used to reflect the magnitude of conditioning and extinction, respectively. These scores were based on self-reference totals obtained in the three major periods. Essentially, a CS represents a percentage increase (or decrease) in the number of self-reference statements emitted during the conditioning period when compared to free operant performance. Or,

$$CS = \frac{CL - BR^*}{BR^*} \times 100,$$

where CL = conditioning level and BR\* = adjusted base rate (8). Similarly, the ES is given by

$$ES = \frac{CL - EL}{CL} \times 100,$$

where EL = extinction level.

Evaluation of awareness tests.--A modification of the criteria for level of conscious awareness established by Matarazzo et al. (7: 199-200) was utilized to evaluate the taped awareness reports. The four-point rating scale is presented in Table 1.

Awareness level was independently rated by two of the undergraduate research assistants. The awareness tests were duplicated on a single master tape so that judges were given

TABLE 1

## CRITERIA FOR LEVEL OF CONSCIOUS AWARENESS RATINGS

Awareness Level	Criteria
1. No Awareness	S did not mention either the stimulus condition or the response class.
2. Awareness of the Stimulus Condition	S identified the frequent use of the stimulus condition but failed to associate it with anything being said.
3. Awareness of the Stimulus Condition (Plus)	S identified the stimulus condition and indicated that its function was to encourage something said--or identified an incorrect response class.
4. Awareness of the Intent of the Session	S identified the stimulus condition, the response class and the correct relationship.

no information about the S's conditioning performance. An S's level of awareness was based on an evaluation of her total response to the three questions. The individual ratings of the two judges were compared in order to obtain a check on the reliability of the scale. The Pearson  $r$  for their judgments of fifty-nine awareness tests was computed at .80, indicating a satisfactory degree of inter-judge reliability. In addition, the raters were instructed to note all instances where the S believed that the purpose of the experiment was to obtain information about the student. This information was used to examine the possible influence of a correlated hypothesis (see page 36).



Notes to Chapter III

1. Runquist, W. N. Verbal behavior. In J. B. Sidowski (ed.), Experimental methods and instrumentation in psychology. New York: McGraw-Hill, 1966, pp. 487-540.
2. The pilot study served two related but independent research studies. The first was the study being described; the second was identical in format but was designed to investigate the differential effectiveness of schedules of verbal reinforcement. The experimental staffs were the same for both experiments and so were the basic methods and procedures.
3. The one exception was an undergraduate member of the population from which the sample was drawn.
4. Several important modifications relating to the opening phase, the directions given to the S during the opening phase, and the length of the principal segments of the interview were made as a result of difficulties experienced during these pilot sessions. Originally, the opening phase was three minutes in duration. However, it became apparent that a more flexible time limit was needed because Ss varied in the amount of time needed to adjust to the novel setting and to indicate a readiness to commence the task. Initially, Ss were instructed during the opening phase to talk about themselves. This procedure also had to be changed since the majority of the pilot Ss immediately complied, thus producing an abnormally high rate of self-reference emission during the operant period. Finally, the lengths of the free operant, conditioning, and extinction periods were established as a result of experimentation during these sessions. Segments lasting twelve and ten minutes were tried unsuccessfully, for much strain was placed on both the Es and the Ss during these long sessions.
5. Holz, W. C., and Azrin, N. H. Conditioning human verbal behavior. In W. K. Honig (ed.), Operant behavior: areas of research and application. New York: Appleton-Century-Crofts, 1966, pp. 790-826.
6. To avoid the S's response, "Am I finished?" and to promote a continuous flow of conversation throughout the experimental session, Matarazzo's suggestion of providing reinforcements at random was adopted (Matarazzo, J. D., Saslow, G., and Pareis, E. N. Verbal conditioning of two response classes: some methodological considerations. J. abnorm. soc. Psychol., 1960, 61, 191).



Several schedules of random reinforcements were tried during the pilot investigations, and a schedule with a mean of twenty-five seconds was finally selected. Because the stimulus was emitted by the E at random intervals, it was assumed that they would have little systematic effect upon self-references.

7. Matarazzo, J. D., Saslow, G., and Pareis, E. N. Verbal conditioning of two response classes: some methodological considerations. J. abnorm. soc. Psychol., 1960, 61, 190-206.
8. A visual and statistical analysis of the data obtained from the free operant period revealed an abnormally high rate of self-reference emission during the first two minutes of the period. As a result, a decision was made to establish base performance only on the last four minutes of free operant. The shorter duration was mathematically adjusted so that valid comparisons could be made. The data, analysis, and rationale for the adjusted base rate are presented in Chapter IV.

CHAPTER IV  
PRESENTATION AND ANALYSIS OF DATA

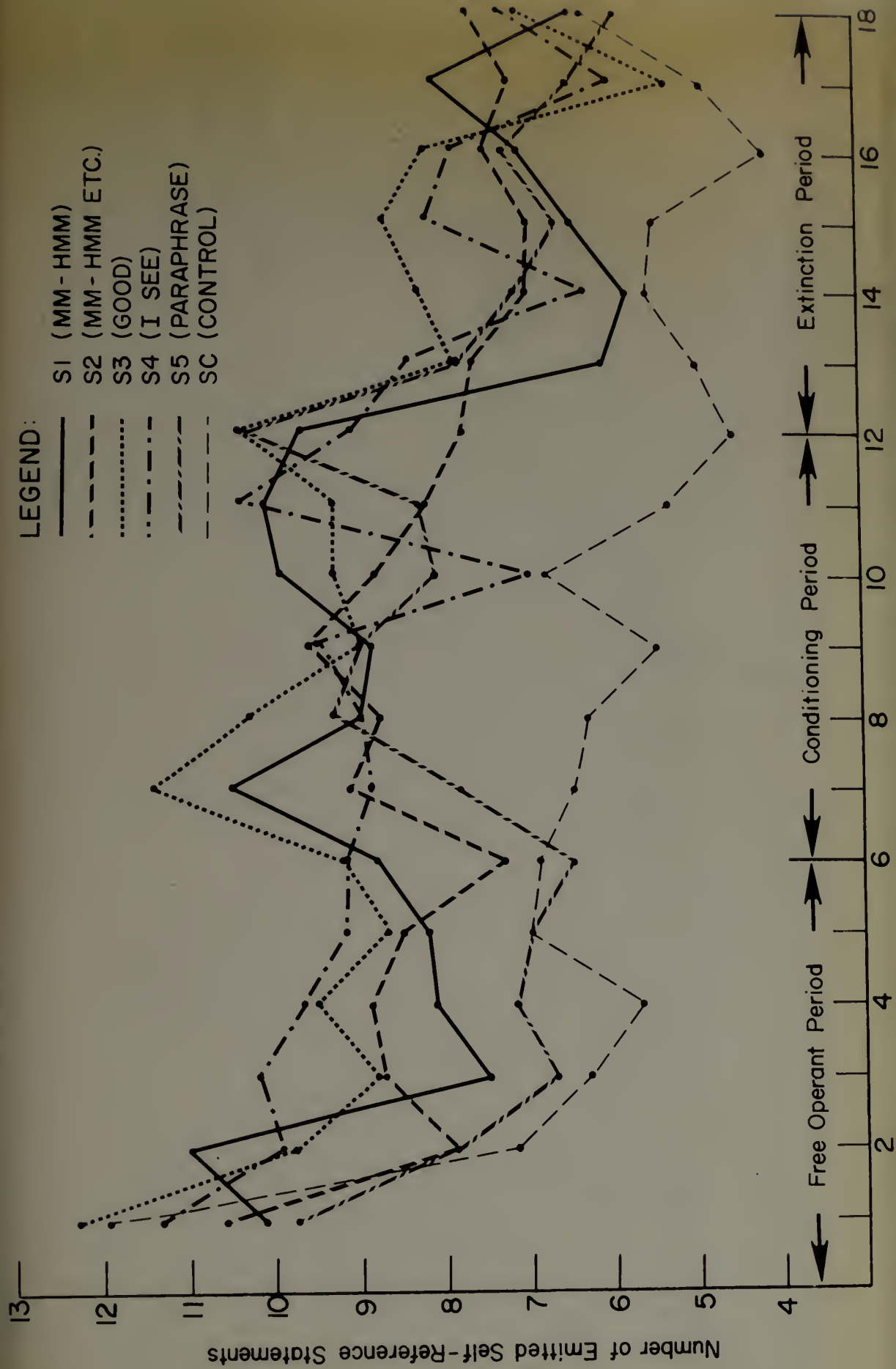
Analyses of the data were performed in six different steps. The first consisted of graphing the frequency of self-reference statements emitted during the experimental session for each stimulus condition. This was followed by a graphic comparison of the mean frequencies of self-reference production observed during the sessions for the six stimuli conditions. The second step was an analysis of data obtained for the free-operant period. The third involved a comparison of each treatment mean with the mean of the control group to determine whether conditioning had, in fact, occurred. The fourth approach consisted of a series of analyses designed to test the two primary hypotheses. The fifth involved the use of non-parametric techniques (chi-square) to examine the relationship between S's conscious awareness and conditioning performance. Finally, correlational analyses were performed to determine the intensity of relationship between free operant performance and conditionability. An a priori determination was made to consider significant all differences that achieved or exceeded the .05 level ( $\alpha = .05$ ).

### Preliminary Analyses

The response frequency unit of measurement, which is characteristic of the operant conditioning paradigm, permits a longitudinal examination of behavior occurring during the experiment. In effect, free operant performance serves as a control to which subsequent conditioning and extinction performance can be compared. The initial treatment of data consisted of the graphing (frequency polygons) of longitudinal effects. First, each stimulus condition group was taken separately and the average number of self-reference statements occurring in one-minute intervals obtained by each E was plotted. In addition, the mean frequencies of the three Es were also plotted, providing a composite response curve for each stimulus condition (see Appendix C). To assess gross differences in longitudinal performance among the six stimuli conditions, the composite response curves of each stimulus condition were graphed as shown in Figure 1.

Several tentative findings result from an examination of these curves. The first point to note is that for the S<sub>5</sub> group (paraphrase) the rate of self-reference responding during the conditioning segment appears appreciably higher than the free operant performance. This pattern also appears, though to a lesser extent, for the S<sub>1</sub> (mm-hmm) and S<sub>3</sub> (good) conditions. A diminution in the rate of self-reference responding during the extinction period is





Duration of the Experimental Period by One-Minute Intervals

Fig. - 1 - Mean Frequencies of self-reference Statements obtained for the six stimuli conditions (N=12 for each stimulus condition)

suggested for all stimuli condition groups. However, this pattern is only barely perceivable for the  $S_2$  (mm-hmm with head nod and smile) and  $S_c$  (control) treatment groups.

It is further noted that the curve for  $S_c$  in Figure 1 reveals a consistently lower mean level of self-reference responding. This can be partially accounted for by the fact that this particular treatment group experienced two of the three aborted sessions. As stated previously (see page 59), zeros were used to replace missing data resulting from the premature termination of a session, and this procedure had the effect of lowering the mean response level.

Of greater significance is the noticeable negative slope of the  $S_c$  curve. This suggests the presence of a slight temporal extinction effect operating during the course of the experimental sessions. A conservative assumption is that a temporal extinction effect is both present and confounded with the experimental performance of each of the stimulus conditions. The effects of such confounding would be to depress both conditioning and extinction performance. The suspected presence of a temporal extinction effect places two qualifications upon subsequent tests of conditioning and extinction effects. First, a test indicating a significant increase in self-reference production during conditioning as compared to base performance is likely to be a conservative appraisal. That is, statistical significance would be achieved in spite of the opposing influence

of the temporal extinction effect. The reverse, however, is likely to be true for tests comparing conditioning and extinction performance. A test revealing a significant decrease in responding during the extinction period is likely to be positively biased, since the overall effect is a function of both extinction and temporal extinction effects operating in the same directions.

However, the most obvious hypothesis suggested by the data presented in Figure 1 is that Ss emitted self-reference statements at an immoderately high rate during the first two minutes of the free operant period. It was observed during the coding process that this high initial rate was, to a large extent, an artifact of the directions given to Ss before the start of the experiment. Recall that Ss were directed to: "Talk about anything that you would like to talk about." As a result, the great majority of Ss "introduced" themselves to the E, resulting in an initial flow of conversation richly permeated with self-reference statements.

Before proceeding with further analyses, it was deemed desirable to inspect more closely the data obtained from the free operant period. The mean frequencies of self-reference responses and associated standard deviations obtained for one-minute segments of the free operant period for each of the six stimuli conditions are shown in Table 2. The means obtained for the six one-minute segments were



TABLE 2

MEANS AND STANDARD DEVIATIONS OF EMITTED SELF-REFERENCE STATEMENTS OBTAINED FOR ONE-MINUTE SEGMENTS OF THE FREE OPERANT PERIOD FOR THE SIX STIMULI CONDITION GROUPS

Stimulus Condition	1st Min.		2nd Min.		3rd Min.		4th Min.		5th Min.		6th Min.		Total	
	$\bar{y}$	s	$\bar{y}$	s	$\bar{y}$	s	$\bar{y}$	s	$\bar{y}$	s	$\bar{y}$	s	$\bar{y}$	s
nan-hmm	10.08	3.12	11.00	3.84	7.50	3.32	8.08	3.18	8.17	2.55	8.83	4.39	53.67	12.69
nan-hmm, etc.	10.42	5.12	7.92	4.17	8.67	4.08	9.08	4.40	8.50	5.28	7.33	3.94	51.92	22.25
good	12.25	3.41	9.75	3.14	8.83	3.01	9.50	4.89	9.08	3.37	9.17	3.69	58.58	14.07
I see	11.25	3.22	9.92	4.89	10.33	3.65	9.75	3.84	9.17	2.41	9.17	5.39	59.58	14.07
paraphrase	9.67	4.42	7.92	3.00	6.67	3.75	7.17	3.24	7.00	2.73	6.17	2.92	44.58	12.24
control	11.92	4.81	7.17	6.16	6.25	4.49	5.67	5.03	7.00	5.43	6.58	4.66	44.59	27.23
Totals	10.96	4.06	8.94	4.40	8.04	3.88	8.21	4.27	8.15	3.83	7.88	4.28		

compared by a one-factor analysis of variance, using repeated measurements obtained on the seventy-two Ss (1: 105-111). Table 3 summarizes the analysis. The significant F of 9.95 ( $P < .01$ ) obtained for segments required rejection of the hypotheses that no differences exist between the six segment means. Ensuing tests of the differences between the segment means were conducted according to procedures developed by Newman and Keuls and described in Winer (1: 80-85). The results indicated the mean of the first minute to be greater than the mean obtained for the second minute ( $p < .01$ ) and the second segment mean was shown to be higher than the remaining four segment means ( $p < .01$ ). No difference was observed between the means of the last four minutes of the free operant period.

TABLE 3

## ANALYSIS OF VARIANCE AMONG ONE-MINUTE SEGMENT MEANS OF THE FREE OPERANT PERIOD

Source	df	SS	M3	
Between Ss	71	3992.55	56.23	5.81**
Within Ss	360	3725.50		
Segments	5	481.68	96.34	9.95#
Residual	355	3243.82	9.68	
Total	431	7718.05		

\*\* $P < .01$

# Significant at .01 level when tested against 1 and 71 df to compensate for lack of independence between segment means. This procedure is described in Myers (2: 160-162).

The analysis of variance confirmed the rate of self-reference emission during the first two minutes to be disjunctive in relation to the remainder of the period. It was concluded that inclusion of the first two minutes in the computation of a S's base rate would result in a spuriously high operant performance. Holz and Azrin (3: 802) have pointed out that in animal operant studies the lengths of the experimental periods are determined by a S's performance and "the contingencies changed only after the conditions had been in effect an extended period of time and the behavior had reached an asymptotic level." They suggest that this procedure seems well advised in verbal conditioning experimentation. Since the analysis presented in Table 3 indicates that an asymptotic level was not achieved during the initial two minutes of the free operant period, a decision was made to calculate all Ss' base rates on data obtained only during the last four minutes of the period. This was accomplished for each S by computing the total number of emitted self-references during the last four minutes ( $T_{3-6}$ ) and adding to that total the quantity  $.5T_{3-6}$ . Or,

$$BR^* = T_{3-6} + .5T_{3-6} ,$$

where  $BR^*$  represents the base rate adjusted to compensate for the shorter duration. All subsequent analyses employed the adjusted base rate.



### Examination of Conditioning and Extinction Effects

Table 4 contains the means and standard deviations of both the conditioning and extinction scores for each stimulus condition and the control. Examination of the conditioning measures tends to support the tentative findings arising from the examination of the response curves (Figure 1). The negative mean conditioning score observed for the  $S_0$  group (-8.77) suggests the influence of a temporal extinction effect. Further, the means of the  $S_4$  (-8.16) and  $S_2$  (-5.10) groups appear similar to that of the control condition, thus confirming the absence of a conditioning effect for these two treatments. On the other hand, the descriptive measures obtained for  $S_5$  and  $S_1$ , and to a lesser extent  $S_3$ , suggest the presence of significant verbal conditioning.

Special note should be taken of the high variability in operant responding for the  $S_2$  and  $S_0$  groups. The latter can be largely explained by the fact that  $S_s$ ' verbal behavior was not under the influence of a prescribed treatment, thus permitting an opportunity for unspecifiable variables to act in multidirectional ways on the operant. However, this explanation seems less appropriate for the  $S_2$  condition where reinforcement was attempted and similarly high variability resulted.

To determine which stimuli conditions demonstrated

TABLE 4

MEANS AND STANDARD DEVIATIONS OF BOTH CONDITIONING AND EXTINCTION SCORES OBTAINED FOR THE STIMULI CONDITION TREATMENT GROUPS

		S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>c</sub>
Conditioning	$\bar{y}$	25.67	-5.10	15.33	-8.16	33.31	-8.77
Scores	s	24.76	50.04	32.34	15.23	34.35	49.82
Extinction	$\bar{y}$	33.95	6.00	23.81	11.02	13.34	10.59
Scores	s	15.26	53.63	18.25	27.81	32.38	30.86

Note: A negative mean conditioning score indicates a reduction of self-reference production during conditioning when compared to adjusted base rate performance.

successful conditioning and extinction, Dunnett's t-tests (1: 89-92) were computed between the conditioning score means of the five principal stimuli conditions and the control condition. (Dunnett's approach to multiple comparisons holds alpha level constant for the collection of five tests.) The t-statistics were computed by,

$$t(6,66) = \bar{S}_j - \bar{S}_c / \sqrt{2MS \text{ error}/n} ,$$

where  $\bar{S}_j$  represents the mean of the  $j^{\text{th}}$  stimulus group and  $\bar{S}_c$  stands for the mean of the control. Conditioning and extinction scores were subjected to an arc sine transformation, applicable when the dependent variable is percentage data, prior to performing the analysis. (The use of such a transformation tends to both normalize and equalize the

variance in the data.) The form of the transformation is given by

$$Y'_{ij} = \text{arc sine } \sqrt{Y_{ij}} ,$$

where  $Y'_{ij}$  represents the transformed score. The t-statistics resulting from two-tailed tests are presented in Table 5. It can be seen from this table that  $S_5$  (paraphrase) and  $S_1$  (mm-hmm) both demonstrated conditioning if self-reference production during the conditioning period as contrasted to that of the control condition is used as the criterion.  $S_3$  (good) approached ( $P < .05$ ; one tail) but did not achieve the level of significance established for this research. Further, no stimulus group was shown to have demonstrated greater extinction than the control condition.

TABLE 5

DUNNETT'S t-STATISTICS RESULTING FROM COMPARISONS OF THE TRANSFORMED MEANS OF EACH STIMULUS CONDITION WITH THE CONTROL FOR BOTH CONDITIONING AND EXTINCTION MEASURES (transformed to the arc sine)

Comparison	t-Statistics	
	Conditioning	Extinction
$S_1$ with $S_c$	3.20**	1.93
$S_2$ with $S_c$	.59	-.37
$S_3$ with $S_c$	2.28	1.21
$S_4$ with $S_c$	.07	.04
$S_5$ with $S_c$	3.73**	.45

\*\*  $p < .01$  (two-tailed test)



The primary hypothesis that no difference exists among the five stimulus conditions relative to their reinforcing value was tested by a 3 x 5 analysis of variance. Untransformed conditioning score means and standard deviations for the three levels of E and five levels of S are shown in Table 6. The analysis of variance was performed on transformed data (transformed to the arc sine) and is summarized by Table 7. The significant F ( $F = 2.19$ ;  $P < .05$ ) for the interaction of experimenters by stimuli conditions suggests that the spread among transformed means of the stimuli conditions changed across experimenters. This interpretation is confirmed by Figure 2 in which the transformed treatment combination means are graphed. It can be seen, for example, that although the overall mean of  $S_5$  appears to surpass those of the remaining four stimuli conditions, this relationship is not consistent for the three experimenters.

As a first step to determine the exact nature of the experimenter x stimuli condition interaction, a simple effects test was performed on the transformed data (1: 235-238). As Table 8 shows, one or more differences between treatment combination means can be found in each of  $E_2$  and  $E_3$  categories. The treatment combination means at  $E_2$  and  $E_3$  were compared by Newman-Keuls procedures utilizing critical values based on the .05 level of significance. At  $E_2$ ,  $S_5$  was found to surpass both  $S_4$  and  $S_2$ , and  $S_3$  was found to

TABLE 6

UNTRANSFORMED CONDITIONING SCORE MEANS AND STANDARD DEVIATIONS  
FOR THE FIVE STIMULI CONDITIONS BY EXPERIMENTERS<sup>a</sup>  
(n = 4 in each cell)

	Experimenters											
	E <sub>1</sub>		E <sub>2</sub>		E <sub>3</sub>		E <sub>3</sub>		E <sub>3</sub>		Total	
	$\bar{y}$	s	$\bar{y}$	s	$\bar{y}$	s	$\bar{y}$	s	$\bar{y}$	s	$\bar{y}$	s
S <sub>1</sub> (mm-hmm)	24.90	8.83	14.28	15.21	37.85	39.58	25.67	24.76				
S <sub>2</sub> (mm-hmm, etc.)	28.64	58.62	- 2.97	10.56	-40.96	48.96	- 5.10	50.04				
S <sub>3</sub> (good)	4.75	28.39	39.72	18.33	1.53	38.57	15.33	32.34				
S <sub>4</sub> (I see)	1.90	20.89	-16.09	10.85	-10.27	8.49	- 8.16	15.23				
S <sub>5</sub> (paraphrase)	7.96	13.69	63.56	41.40	28.43	32.83	33.31	34.35				
Totals	13.63	30.14	19.70	35.63	3.31	41.93						

<sup>a</sup>To the nearest hundredth.

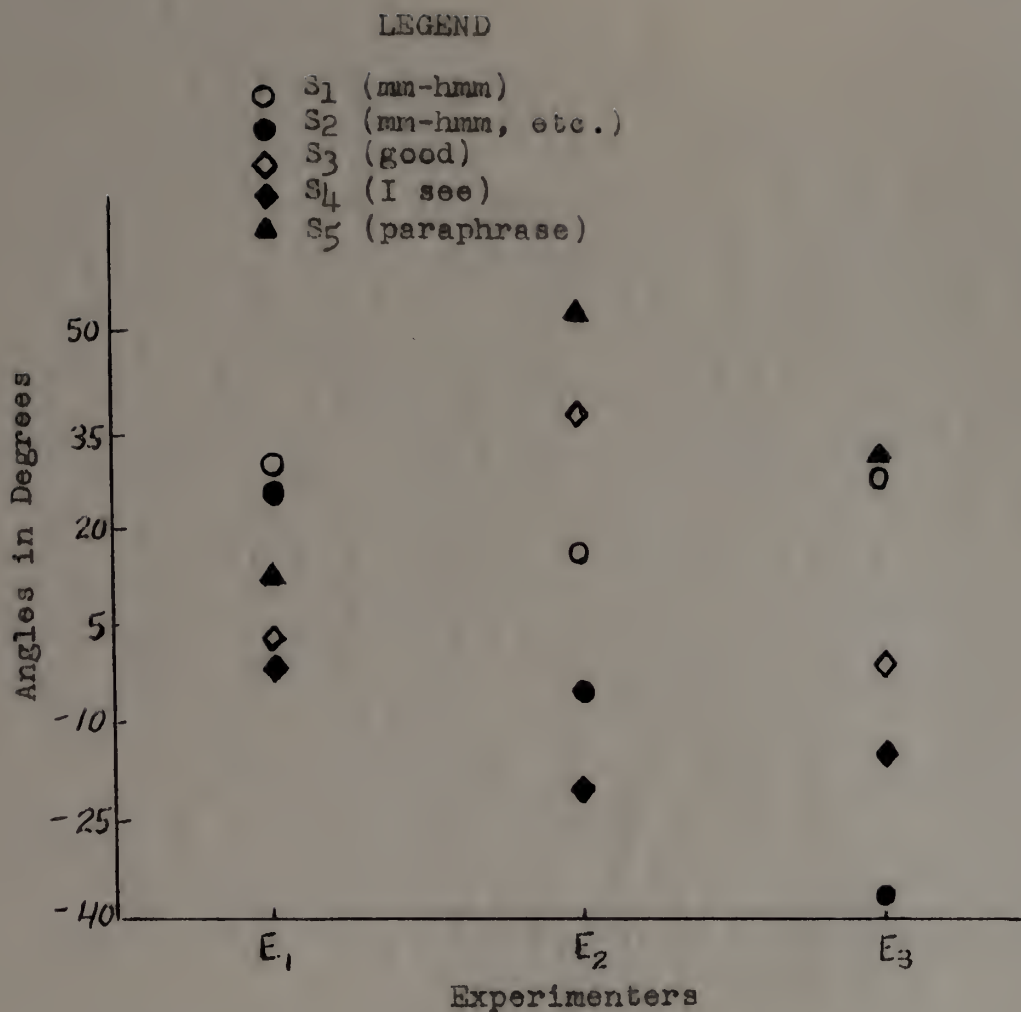


Fig. 2.--Treatment combination means transformed to the arc sine obtained for the five stimuli conditions by experimenters.

Note: Conditioning scores were transformed to angles and expressed in degrees.



TABLE 7

ANALYSIS OF VARIANCE OF THE TRANSFORMED CONDITIONING  
SCORES FOR STIMULI CONDITIONS BY EXPERIMENTERS  
(transformed to the arc sine)

Source	df	SS	MS	F
Experimenters	2	2,298.07	1,419.04	1.38
Stimuli Conditions	4	16,979.24	4,244.81	5.11 <sup>***</sup>
Exp. x Stim. Conditions	8	14,528.29	1,816.04	2.19 <sup>*</sup>
Error	45	37,351.24	830.03	
Total	59	71,156.84		

\*  $p < .05$

\*\*  $p < .01$

TABLE 8

ANALYSIS OF THE SIMPLE EFFECTS OF TRANSFORMED TREATMENT  
COMBINATION MEANS FOR THE THREE LEVELS OF THE  
EXPERIMENTER VARIABLE  
(transformed to the arc sine)

Source	df	SS	MS	F
Stim. Con. for $E_1$	4	2,710.15	677.54	.82
Stim. Con. for $E_2$	4	15,328.86	3,832.22	4.62 <sup>**</sup>
Stim. Con. for $E_3$	4	13,468.52	3,367.13	4.06 <sup>**</sup>
Error	45	37,351.24	830.03	
Total	57	68,858.77		

\*\*  $p < .01$

be greater than  $S_4$ . The analysis at  $E_3$  demonstrated that the cell means of  $S_5$  and  $S_1$  were significantly greater than the mean of  $S_2$ .

The significant  $F$  ( $F = 5.11$ ;  $P < .01$ ) for the stimuli conditions main effect seen in Table 7 prompted the use of the Newman-Keuls comparison among the five means. At the .05 level, the  $S_5$  and  $S_1$  treatment groups obtained higher average transformed conditioning scores than did  $S_4$  and  $S_2$ . However, these findings must be qualified as a result of the significant experimenter x stimuli condition interaction. The paraphrase ( $S_5$ ) and the utterance "mm-hmm" ( $S_1$ ) were found to be differentially effective only when separate comparisons within each level of  $E$  were considered. Specifically, it appears that the greater reinforcing value of the  $S_5$  and  $S_1$  conditions is largely a function of the high rate of self-reference responding obtained through the use of  $S_5$  by  $E_2$  and the high rate demonstrated by  $E_3$  for the  $S_5$  and  $S_1$  treatment conditions. The analysis of variance was unable to show significant variability among stimuli condition means for  $E_1$ .

The null hypothesis that no differences exist among the extinction effects associated with the stimuli conditions was also tested by a  $3 \times 5$  analysis of variance. Untransformed extinction score means and standard deviations for each treatment combination are shown in Table 9. Again, an examination of the marginal totals tends to support the

TABLE 9

UNTRANSFORMED EXTINGUISHION SCORE MEANS AND STANDARD DEVIATIONS  
FOR THE FIVE STIMULI CONDITIONS BY EXPERIMENTERS<sup>a</sup>  
(n = 4 in each cell)

	E <sub>1</sub>		E <sub>2</sub>		E <sub>3</sub>		Total	
	$\bar{y}$	s	$\bar{y}$	s	$\bar{y}$	s	$\bar{y}$	s
S <sub>1</sub> (mm-hmm)	23.16	11.33	29.39	10.61	49.31	10.77	33.95	15.26
S <sub>2</sub> (mm-hmm, etc.)	-10.92	76.60	1.85	44.30	27.08	41.47	6.00	53.63
S <sub>3</sub> (good)	23.04	10.37	27.25	21.05	21.13	25.38	23.81	18.25
S <sub>4</sub> (I see)	- .28	30.10	20.81	15.06	12.52	37.43	11.02	27.81
S <sub>5</sub> (paraphrase)	14.55	18.18	21.35	23.91	4.11	52.36	13.34	32.38
Totals	9.61	36.74	20.13	24.96	22.83	35.97		

<sup>a</sup>To the nearest hundredth.



observations made from the response curves shown in Figure 1. Table 10 summarizes the results of the analysis of variance performed on transformed data. Failure to obtain a significant F leads to acceptance of the null hypothesis.

TABLE 10  
ANALYSIS OF VARIANCE OF TRANSFORMED EXTINCTION SCORES  
FOR STIMULI CONDITIONS BY EXPERIMENTERS  
(transformed to the arc sine)

Source	df	SS	MS	F
Experimenters	2	1,295.69	647.84	.68
Stimuli Conditions	4	6,694.13	1,673.53	1.76
Exp. x Stim. Conditions	8	3,101.84	387.73	.41
Error	45	42,814.32	951.43	
Total	59	53,905.98		

As a result of both the Dunnett's t-test analysis and the analysis of variance, it can be concluded that this research was unable to demonstrate statistically either significant extinction for any stimulus condition or significant differences in the number of self statements emitted during the extinction period among the five principal stimuli conditions.

On the basis of an a priori decision, additional chi-square analyses were performed on the conditioning and extinction data. The advantage of such tests is that the

traditional assumptions associated with analysis of variance models (normality, homogeneity of variance, independence, etc.) need not be met. To examine the relative reinforcing value of the stimuli conditions, it was first necessary to provide a criterion of conditioning. A crude binomial classification was devised whereby a S who, relative to her own base rate, increased in production of self-reference statements in the conditioning period was labeled a "conditioner." Ss manifesting a decrease in the selected response during the conditioning period were considered "non-conditioners."

Table 11 gives the obtained and expected numbers of Ss in each stimulus condition group when further classified by the conditioning criterion. The resultant  $X^2$  of 23.34 ( $P < .01$ ) was sufficient evidence to reject the null hypothesis that instances of conditioning were distributed at random among the six stimuli condition groups. To determine which stimulus group, or stimuli groups, accounted for the highly significant  $X^2$ , each stimulus condition was in turn compared against the remaining five others. Four significant comparisons resulted: (a)  $S_5$  ( $X^2 = 8.16$ ;  $p < .01$ ), (b)  $S_c$  ( $X^2 = 8.16$ ;  $p < .01$ ), (c)  $S_1$  ( $X^2 = 4.94$ ;  $p < .05$ ), (d)  $S_4$  ( $X^2 = 4.93$ ;  $p < .05$ ). These findings indicate that when compared to "all others" both the  $S_5$  and  $S_1$  treatment groups possessed a greater number of Ss who conditioned. Conversely, under the same comparison, the control and  $S_4$  groups contained significantly fewer conditioners.

TABLE 11

OBSERVED AND THEORETICAL FREQUENCIES OF "CONDITIONERS"  
AND "NON-CONDITIONERS" FOR EACH STIMULUS  
CONDITION GROUP<sup>a</sup>

Stimulus Group	Conditioners	Non-Conditioners	Total
S <sub>1</sub>	10 (6.50)	2 (5.50)	12
S <sub>2</sub>	5 (6.50)	7 (5.50)	12
S <sub>3</sub>	8 (6.50)	4 (5.50)	12
S <sub>4</sub>	3 (6.50)	9 (5.50)	12
S <sub>5</sub>	11 (6.50)	1 (5.50)	12
S <sub>6</sub>	2 (6.50)	10 (5.50)	12
Totals	39	33	72

$$X^2 = 23.34^{***}$$

<sup>a</sup>Theoretical frequencies are contained in parentheses.

\*\*\*  $p < .01$

The hypothesis that no difference exists in the distribution of conditioners and non-conditioners among the three experimenters was similarly tested (3 x 2 contingency table, not shown). The  $X^2$  was computed at .56, falling far short of significance.

Similar analyses were carried out on the extinction data. Here, a decrease in the number of self-reference statements during the extinction period, as compared to the conditioning period, was considered an instance of extinction.



The 6 x 2 contingency table containing the observed and expected frequencies of extinction and non-extinction for each stimulus group is presented in Table 12. A calculated  $\chi^2$  of 9.78 failed to achieve significance.

TABLE 12

OBSERVED AND THEORETICAL FREQUENCIES OF EXTINCTION AND NON-EXTINCTION FOR EACH STIMULUS CONDITION GROUP<sup>a</sup>

Stimulus Group	Extinction	Non-Extinction	Total
S <sub>1</sub>	0 (3)	12 (9)	12
S <sub>2</sub>	5 (3)	7 (9)	12
S <sub>3</sub>	1 (3)	11 (9)	12
S <sub>4</sub>	4 (3)	8 (9)	12
S <sub>5</sub>	3 (3)	9 (9)	12
S <sub>6</sub>	5 (3)	7 (9)	12
Totals	18	54	72

$$\chi^2 = 9.78$$

<sup>a</sup>Theoretical frequencies are contained in parentheses.

When instances of extinction and non-extinction were analyzed by experimenters (3 x 2 contingency table, not shown), a non-significant  $\chi^2$  of 2.56 also resulted.

The series of  $\chi^2$  analyses strongly support the findings obtained through the use of parametric statistical procedures. Dunnett's t-test analysis showed significant

conditioning in the  $S_5$  and  $S_1$  treatment groups.  $S_5$  and  $S_1$  appeared to be the most effective verbal reinforcers on the basis of an analysis of variance; however, the differential effectiveness of these two stimuli conditions was not observed for all experimenters. Finally, the  $X^2$  analysis demonstrated that  $S_5$  and  $S_1$  groups, when compared to "all others," contained more Ss who had been "conditioned."

The inability to demonstrate either instances of extinction or differential extinction performance among the treatment groups was a characteristic outcome of all analyses.

#### Conscious Awareness and Conditionability

The awareness level assigned a S was based on the average of the two ratings provided by the judges. The mean awareness level of fifty-nine Ss belonging to one of the five principal stimuli treatment groups was computed at 1.42 with a standard deviation of .56. (Awareness data were not available for a  $S_2$  session that had to be aborted.) On the whole, the participants were very much unaware of the nature of the experiment. No S achieved a level 4 rating (complete awareness), and only three received a level 3 rating (mention of the stimulus plus the notion that it was employed to encourage verbalization.)

To test whether Ss who had been conditioned reported more conscious awareness of the experimental nature of the

interview, a  $\chi^2$  analysis was performed. Ss receiving an awareness level rating of 1.5 or less were considered to be "unaware." Ss with awareness levels in excess of 1.5 were classified as possessing "moderate awareness." Conditioners and non-conditioners were determined by the previous criterion. The observed and expected numbers of Ss in the unaware and moderately aware groups, when further classified in terms of the conditioning criterion, are given in Table 13. The computed  $\chi^2$  statistic was .17 and was clearly non-significant. There is no evidence to suggest a relationship between reported awareness and conditionability as defined. The finding is qualified by the fact that assignment into either the conditioner or non-conditioner classification is somewhat a function of the stimulus condition received. (The small expected frequencies prevent an analysis of awareness level by stimuli conditions.)

TABLE 13

OBSERVED AND EXPECTED FREQUENCIES WHEN Ss WERE CLASSIFIED BY REPORTED AWARENESS AND CONDITIONING PERFORMANCE<sup>a</sup>

	No Awareness	Moderate Awareness	Total
Conditioners	25 (25.71)	12 (11.29)	37
Non-conditioners	16 (15.29)	6 ( 6.71)	22
Totals	41	18	59

$$\chi^2 = .17$$

<sup>a</sup>The theoretical frequencies are contained in parentheses.



The relationship between conditionability and a prominent correlated hypothesis offered by many Ss was also examined. The correlated hypothesis was that the purpose of the experimental session was to permit the E an opportunity to learn something about the client during the session. Ss that offered and failed to offer the correlated hypothesis during the awareness test were identified and further classified by the conditioning criterion (Table 14). A chi-square analysis was performed. The failure of the statistic ( $\chi^2 = .41$ ) to achieve significance indicates that the above correlated hypothesis cannot be shown to be related to conditionability as defined.

TABLE 14

OBSERVED AND EXPECTED FREQUENCIES WHEN Ss WERE CLASSIFIED BY CONDITIONING PERFORMANCE AND MENTION OF THE CORRELATED HYPOTHESIS<sup>a</sup>

	Correlated Hypothesis		Total
	Mentioned	Not Mentioned	
Conditioners	20 (18.81)	17 (18.19)	37
Non-conditioners	10 (11.19)	12 (10.81)	22
Totals	30	29	59

$\chi^2 = .41$

<sup>a</sup>The theoretical frequencies are contained in parentheses.

Base Rate and Conditionability

Table 15 presents Pearson product-moment correlations computed between untransformed adjusted base rates (BR<sup>\*</sup>) and conditioning levels (CL) and between adjusted base rates and conditioning scores (CS) for each stimulus condition. It can be seen that a substantial positive relationship exists between the number of self-reference statements emitted during the free operant period and the number emitted during the conditioning period. This expected result is best reflected by the  $r$  of .71 ( $p < .01$ ) calculated for all subjects exposed to a stimuli condition.

TABLE 15

PEARSON PRODUCT-MOMENT CORRELATIONS BETWEEN BASE RATES AND CONDITIONING LEVELS AND BASE RATES AND CONDITIONING SCORES (untransformed data)

Variables	Stimuli Conditions					Total	Control
	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	(n=60)	(n = 12) S <sub>c</sub>
BR <sup>*</sup> and CL <sup>a</sup>	.81**	.76**	.50	.86**	.89**	.71**	.87**
BR <sup>*</sup> and CS <sup>b</sup>	.39	.07	.25	-.65*	.12	.18	.81**

<sup>a</sup>Adjusted Base Rates (BR<sup>\*</sup>) and Conditioning Levels (CL).

<sup>b</sup>Adjusted Base Rates (BR<sup>\*</sup>) and Conditioning Scores (CS).

\* $p < .05$  (two-tailed test)

\*\* $p < .01$  (two-tailed test)

When correlations between conditioning scores, which reflect the magnitude of conditioning, and base rates are considered, significant relationships are sparse. With the exception of the  $S_4$  (I see) group, the relationship between CSs and  $BR^*$ s appears to be positive but non-significant. The  $S_4$  treatment group demonstrated a significant negative correlation ( $r = .65$ ;  $p < .05$ ) indicating that poorer performance on the conditioning criterion was associated with higher base rates. It is interesting to note, also, that Ss who were not exposed to the systematic application of a stimulus ( $S_0$ ) produced a significant positive correlation ( $r = .81$ ;  $p < .01$ ). This finding tends to confirm obliquely that a substantial relationship of a linear variety between free operant performance and degree of conditioning cannot be supported by this research.

In an effort to probe for the possible existence of a non-linear relationship between free operant performance and performance during conditioning, a  $3 \times 2$  contingency table was constructed (see Table 16). Ss were identified as belonging to one of three base rate categories: (a) low base rate (emitted thirty or fewer self-reference statements), (b) average base rate (between thirty-one and fifty-nine self-references), and (c) high base rate (over sixty self statements). Ss were further classified as being either conditioners or non-conditioners. A non-significant  $\chi^2$  of 4.67 resulted from the analysis and necessitated the



TABLE 16

OBSERVED AND EXPECTED FREQUENCIES OF "CONDITIONERS" AND "NON-CONDITIONERS" BY BASE RATE PERFORMANCE<sup>a</sup>

Base Rate Performance	Conditioners	Non-Conditioners	Total
Low Base Rate (BR* ≤ 30)	3 ( 4.92)	5 ( 3.08)	8
Medium Base Rate (30 < BR* < 60)	26 (22.20)	10 (13.80)	36
High Base Rate (BR* ≥ 60)	8 ( 9.84)	8 ( 6.16)	16
Totals	37	23	60

$$\chi^2 = 4.67$$

<sup>a</sup>The theoretical frequencies are contained in parentheses.

retention of the null hypothesis that no difference exists in the distribution of conditioners among Ss of the three base rate classifications. Specifically, this analysis was unable to support the contention that a low base rate facilitates conditioning while a high initial rate tends to restrict conditioning performance.

Notes to Chapter IV

1. Winer, B. J. Statistical principles in experimental design. New York: McGraw-Hill, 1962.
2. Myers, J. L. Fundamentals of experimental design. Boston: Allyn and Bacon, 1966.
3. Holz, W. C., and Azrin, N. H. Conditioning human verbal behavior. In W. K. Honig (ed.), Operant behavior: areas of research and application. New York: Appleton-Century-Crofts, 1966, pp. 790-826.

## CHAPTER V

### SUMMARY AND CONCLUSIONS

The primary purpose of this investigation was to determine the relative effectiveness of five commonly used stimuli in influencing the verbal behavior of interviewees in a setting resembling that of an initial counseling interview. The five stimuli conditions studied were: (a) "mm-hmm"; (b) mm-hmm accompanied by a head nod and smile; (c) "good"; (d) "I see"; and (e) a short paraphrase. Self-reference statements emitted by the interviewees constituted the verbal behavior to which the stimuli conditions were systematically applied and evaluated. Interest was primarily focused upon conditioning and extinction effects.

In addition, there were two secondary areas of descriptive exploration. The first concerned the relationship between S's conditioning performance and reported awareness, while the second involved a consideration of the relationship between S's free operant performance and subsequent conditionability.

The need to conduct research in these three areas was established by a review of the literature.

#### Summary of Method

The sample participants (Ss) consisted of seventy-two



undergraduate females randomly selected from a required course in the elementary teacher training program at the University of Massachusetts. Three students, enrolled in a graduate guidance and counseling program, were trained within the context of a pilot investigation to serve as experimenters (Es). Essentially, a  $3 \times 6$  factorial design was employed where the Es served as three levels of the experimenter variable, and the five stimuli conditions plus a control comprised the six levels of the stimuli condition variable. Each S was randomly assigned to one of the eighteen treatment combination groups.

Each S was engaged in an experimental interview from which data were obtained. Both prior to and at the outset of the session, Ss were told that the purpose of the interview was to provide practice for counselors in training. This guise lent face validity to the session and, at the same time, camouflaged the true intent of the experimentation.

The interview proper consisted of five discreet periods: (a) an opening (approximately five minutes), (b) free operant (six minutes), (c) conditioning (six minutes), (d) extinction (six minutes), and (e) a post-experimental awareness test (approximately three minutes). During the free operant segment, a base rate of self-reference responding was established for each S. An assigned stimulus condition was provided by the E immediately following all emitted self-reference pronouns during the conditioning period in an

effort to increase a S's rate of self-reference responding. During the extinction period, the E attempted to effect a decrease in self-reference responding through selective withholding of the stimulus condition. Upon completion of the experimentation, Ss were asked three questions designed to assess their level of conscious awareness relative to the nature and purpose of the experiment.

### Principal Findings

The presented evidence shows that emission of self-reference statements can be influenced by experimenter responses in a quasi-counseling setting. Further, the results indicate that certain stimuli provided by the E are more effective than others in increasing S's self-reference statements. Specifically, the paraphrase ( $S_5$ ) and the utterance, "mm-hmm" ( $S_1$ ) were shown to be effective reinforcers for the response class studied. The use of both resulted in a significant increase in self-reference production. When the reinforcing values of the five selected stimuli conditions were compared, the paraphrase and the "mm-hmm" utterance also appeared to be maximally effective. This statement must be somewhat qualified, since the ascendancy of these two verbal stimuli was not statistically demonstrated for all Es. Evidence resulting from the employment of "good" ( $S_3$ ) also suggests that it may be an effective reinforcer; however, the magnitude of its influence was not great enough to achieve

statistical significance.

The use of "mm-hmm" with affirming head nod and smile ( $S_2$ ) and the "I see" ( $S_4$ ) verbalization were clearly ineffective in promoting an increase in self-reference production. In summary, these findings provide some confirmation for the view that the selected stimuli are not equally effective in the operant conditioning process. Further, these observed findings do not support Salzinger's (1: 81) hypothesis that verbal stimuli possessing greater verbal content have greater reinforcing value.

Both significant extinction of reinforced responses within a given stimulus treatment group and differential extinction effects among the stimuli groups were not statistically demonstrated by this research.

It was found that the Ss, generally, were very much unaware of the response-reinforcement contingency. Further analysis showed that successful operant conditioning of self statements appears possible in the absence of reported subject awareness.

A substantial relationship between subject performance during the free operant period and subsequent conditioning was not discernible in this study. Conditioning was shown to have occurred over a wide range of free operant responding.

Replication of these findings with different subjects and in a different setting is necessary before great



confidence can be placed in their validity. As Dinsmoor (2: 427) has pointed out, the conventional statistical tests upon which these conclusions are based provide only confidence that the results can be generalized to a hypothetical replication with the same group of subjects. They add little confidence, however, that these results will be duplicated with a new population.

### Discussion

Implications for the evaluation of work previously undertaken in verbal conditioning and for the design of future studies are suggested by the above findings. Many past investigations conducted in a conversational setting operated on the assumption that specific stimuli, such as "mm-hmm," "good," "yes," etc., were equally efficacious and, therefore, could be grouped under a broader rubric of generalized reinforcement. For example, Ryan and Krumboltz (3: 317) administered what was termed positive reinforcement to various types of client statements and the "reinforcers consisted of such verbal expressions as 'Good,' 'Fine,' 'That's a good idea,' or any other verbal or non-verbal sign of approval by the counselor." Salzinger and Pisoni (4) employed such expressions as "mm-hmm," "uh-huh," "I see," "yeah," etc., under a single treatment condition called verbal agreement. Similar occurrences are seen in the writings of Verplanck (5), Merbaum (6), Simkins (7), Sarason and

Ganzer (8), Krumboltz and Thoresen (9), Salzinger and Pisoni (10), and Adams, Butler, and Noblin (11). The findings of this study, however, suggest that the specific verbalizations frequently amalgamated into more general classes of reinforcement are not equally effective. In fact, several ("mm-hmm" with affirming head nod and smile and "I see") stimuli cannot be termed reinforcing in this study, since observation did not establish that they strengthened the frequency of the examined operant. It would seem, therefore, that the reinforcing value of all specific expressions would have to be established before they are used as components of more general stimulus conditions in future research.

The failure of the analyses to indicate the presence of extinction effects deserves additional comment. A visual re-examination of the response curves in both Figure 1 and Appendix C tends to indicate that such effects are existent. The failure to demonstrate their presence seems to concur with Sarason's (12: 299) observation "that extinction may be more difficult to assess in relation to verbally conditioned responses than in more traditional conditioning settings." This writer feels that much of the difficulty can be attributed to the length of the extinction period. Operant extinction takes place more slowly than operant conditioning in animal research. Therefore, a longer extinction period in relation to conditioning appears justified and is suggested for future research. One cannot escape the thought that, had



a longer period of extinction been utilized, the second null hypothesis offered in this study would not have been retained. Also, the use of a mute extinction period rather than one in which the stimulus was provided at random intervals may have achieved more discernible results.

The discovery that the three different Es obtained somewhat different results was not surprising. Some of the E differences can undoubtedly be attributed to a lack of complete standardization in their responding. However, considering the impressive evidence marshalled by Sarason (13), and most recently by Rosenthal (14), less readily observable E effects cannot be dismissed. Each of these researchers has drawn upon data from a broad range of experimental activity which asserts that the experimenter is a relevant variable in most types of research conducted in a social setting. Investigators desiring to conduct research in such a setting must be prepared to live with these troublesome E effects until such time as future exploration is able to penetrate the cryptic nature of experimenter and subject interaction. This researcher must agree with the recent statement offered by Sarason (12: 300) that "it would seem necessary in future reinforcement studies to increase understanding of the human reinforcer."

The failure of "mm-hmm" with affirmative head nod and smile and the "I see" statement to reinforce the operant is also of interest. Particularly noteworthy is the surprising



polarity in results between the "mm-hmm" utterance and the "mm-hmm" accompanied by the non-verbal gestures since, at first glance, these two stimuli appear quite similar. A clue relating to the explanation of this disparity may exist in the Mandler and Kaplan (15) study. These writers report successful conditioning of plural nouns with the stimuli "mm-hmm" only when a distinction between Ss who perceived the stimulus as being of a positive nature and Ss who perceived negative aspects was made. The positive-perceiving group conditioned while the negative-perceiving sub-sample actually exhibited a decrease in operant production during attempted conditioning. It might be that the head nod and smile with the accompanied "mm-hmm" utterance ( $S_2$ ) was not perceived as being a genuinely positive response by the Ss in this study. The repeated use of this response, which necessitates much surplus involvement on the part of the E, could easily be interpreted by many Ss as being mechanical and insincere. The great variability in operant behavior associated with this treatment, noted in the last chapter, lends a modicum of support to this hypothesis. However, perhaps a more plausible explanation for the high variability in subject responding rests with a failure to standardize the E response sufficiently. In any event, it would seem advantageous in future research efforts to assess Ss' perceptions relating to the sincerity and genuineness of the E's responses.

The impotence of the "I see" stimulus condition also

merits consideration. One explanation that can be offered is that the frequent use of "I see" resulted in the E being perceived by some Ss as possessing an unwelcomed depth of understanding into their thoughts and motives. Such a display of "empathy," especially during an initial contact in a restrictive atmosphere, may well be threatening to Ss. Thus, the stimulus, instead of being reinforcing, assumes aversive properties.

The writings of Skinner (16: 221-224) provide an alternative explanation for the lack of effectiveness of the "I see" treatment. Skinner points out that states of deprivation which serve to motivate verbal behavior can be satisfied or even satiated by an indication on the part of the listener that the speakers' verbalizations have been effective. An illustration would be the technique of stopping a repetitive speaker by offering a clear sign that the behavior has had effect, such as saying, "yes, I know!" The stimulus, "I see," as used in this study, may have had just such an effect for many Ss.

It can be seen that the negative results obtained in this research offer some interesting possibilities for future research. Specifically, the relationship between conditionability and client perceptions of the interviewers' responses, especially as they relate to the dimensions of E involvement and genuineness, appears to be a promising avenue of future exploration.



This writer must point out, however, that, historically, verbal conditioning research represents a reaction to the pursuit of subjective motivation. As was noted on the very first page of this report, beginning with the 1955 Greenspoon (17) publication, verbal conditioning efforts have operated on the assumption that verbal behavior is not a facade for the expression of feelings, attitudes, or other inner events. Rather, it is to be regarded as significant behavior in its own right. Skinner (18: 31) has written of the dangers of approaching verbal behavior from the internal experience point of view. In his words, "the practice of looking inside the organism for an explanation of behavior has tended to obscure the variables which are immediately available for a scientific analysis." This writer feels that this report is best concluded by noting that none of the verbal stimuli studied served as a reinforcement for all subjects and several gave little indication of influencing the verbal behavior of a significant number of interviewees. Future efforts should be directed toward improving the specific experimental methods used to assess conditioning performance in a conversational context and toward increasing our knowledge and control of the variables responsible for the great variability in results. With such improvements, more confidence can be placed in the assessment of the reinforcing value of various interviewer responses. Moreover, we will be less tempted to offer intrapsychic explanations in an effort to interpret our findings.



Notes to Chapter V

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APPENDIX A

ASSISTANT DEAN'S LETTER TO STUDY PARTICIPANTS



## THE COMMONWEALTH OF MASSACHUSETTS

University of Massachusetts

Amherst

## SCHOOL OF EDUCATION

Dear Miss Smith:

Mrs. Case and Mr. Kennedy have informed me that you are willing to assist us in our graduate guidance and counseling training program. Your interest and cooperation are greatly appreciated.

We have been able to schedule your counseling interview for Monday, November 3, at 9 o'clock. The interview will last approximately one-half hour. You are requested to report to Miss Liimatainen, the guidance secretary, at Montague House (adjacent to the School of Education) at the appointed time. If a previous commitment will prevent you from keeping this scheduled appointment, please inform Miss Liimatainen as soon as possible so that a more convenient appointment can be arranged.

If you have any questions relating to the interview, Mr. Kennedy, whose office is also located in Montague House, will be willing to assist.

Sincerely,

Ralph R. Pippert  
Assistant Dean

APPENDIX B

FINAL REVISION OF EXPERIMENTER'S PROCEDURES

## FINAL REVISION OF EXPERIMENTER'S PROCEDURES

10/27/66

THERE IS NO TIME LIMIT ON THE OPENING PERIOD. THE OBJECTIVE OF THIS PERIOD IS TO ESTABLISH RAPPORT WITH THE SUBJECT AND TO INTRODUCE THE TASK.

I'm not sure what you have been told about this session, but it is supposed to resemble a special kind of counselor training interview. We call it an unstructured interview. It would be of great help to me if, for the next fifteen minutes or so, you would talk about anything that you would like. You can talk about anything that you would like to talk about.

REACT NATURALLY TO THE SUBJECT.

My role is that of a listener. This is going to be very difficult for me. There will be many times when I will want to say something but if I do then I will not be true to my role of a listener. The intent of my saying very little is not to make you angry or anxious (I will probably be more anxious than you). When we're finished, if you like, we can talk about some of the things you said.

Your role will be that of talking about anything that you would like. I realize that this may be difficult if I say very little. Don't be concerned about awkward pauses.

I don't want to make you annoyed but I have been instructed to assume a listener's role. All I want to do is listen and, in this way, you can be most helpful to me. I won't ask you any questions nor will I answer any questions that you ask of me.

TALK ABOUT THE TASK. DO ALL THAT YOU CAN TO EXTINGUISH ANXIETY.

Would you like to try it now? (If S is ready, then say, "Well, why don't we begin now.") If you think the person is not ready, continue to counsel until you think she is.)

NOTE: When the technician hears, "Why don't we begin now," she will start the clock for the Free Operant.

AFTER THE AWARENESS TEST, TALK TO THE S FOR A WHILE. MAKE THE SESSION AS ENJOYABLE AS POSSIBLE FOR HER.



APPENDIX C

RESPONSE CURVES FOR THE STIMULI CONDITION TREATMENTS

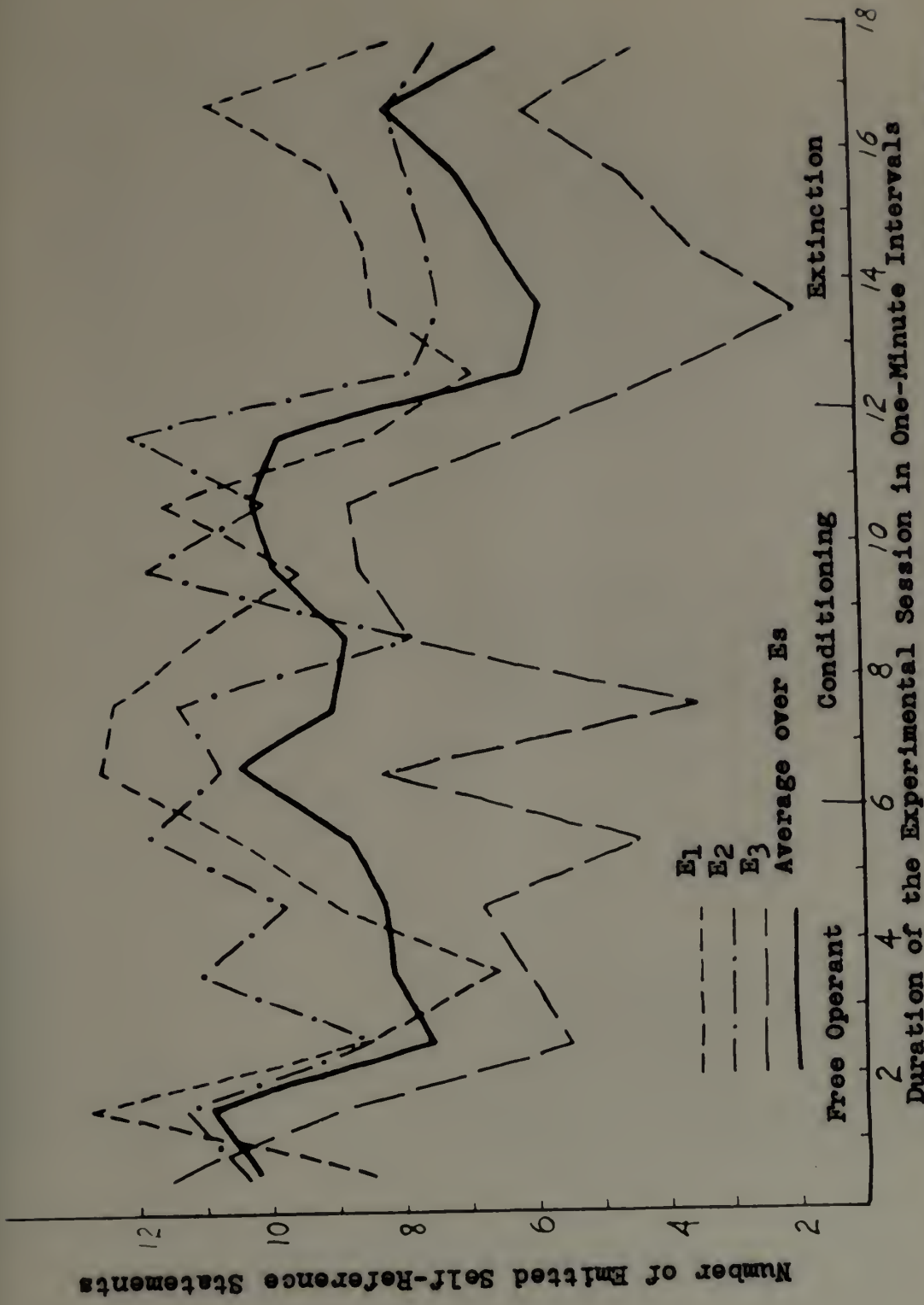


Fig. 3.--Mean Frequencies of Self-Reference Statements Obtained by Each Experimenter (E) for the "mm-hmm" (S<sub>1</sub>) Stimulus Condition. (n = 4 for each experimenter)

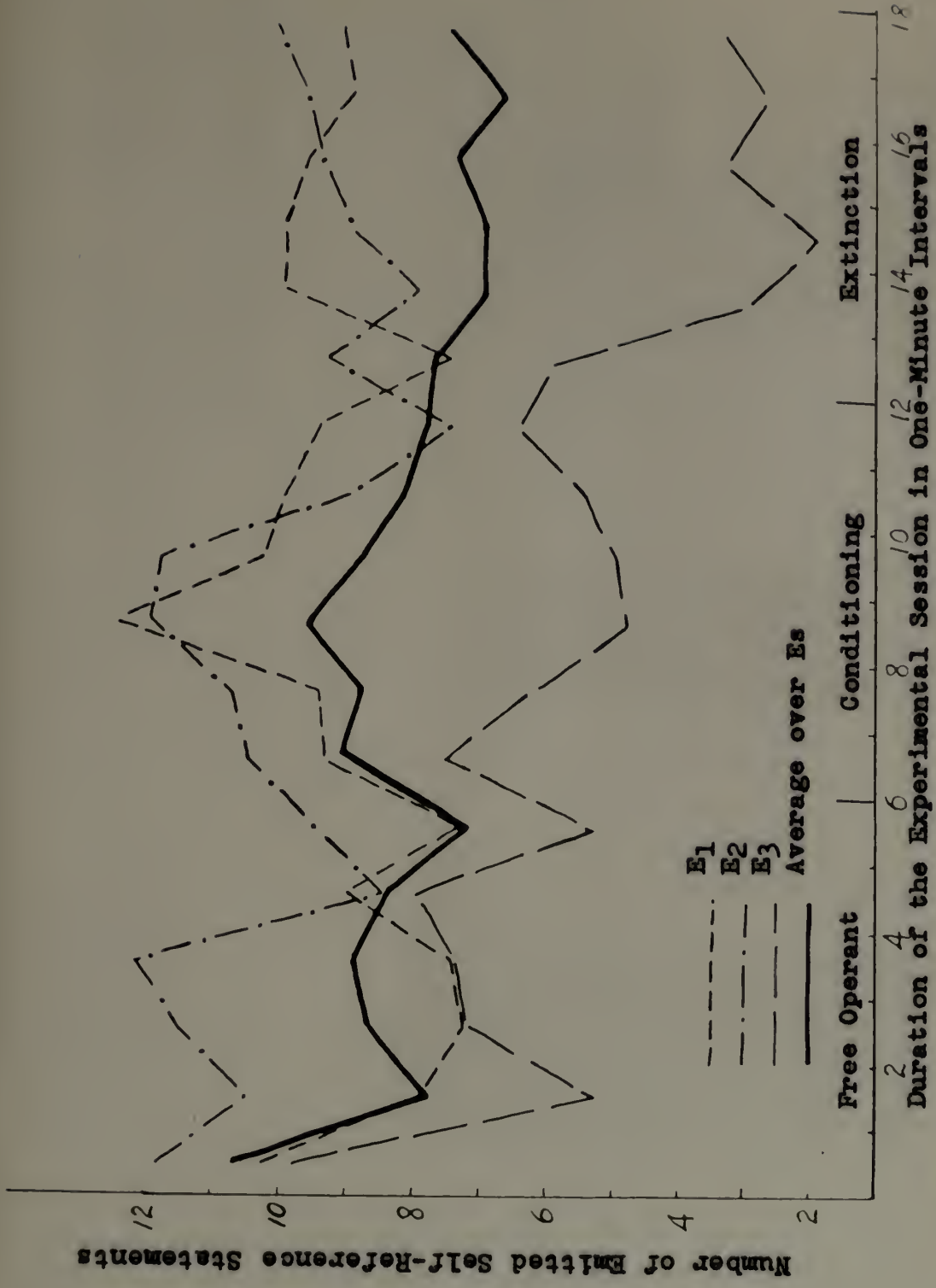


Fig. 4.--Mean Frequencies of Self-Reference Statements Obtained by Each Experimenter (E) for the "mm-hmm with Head Nod and Smile" (S<sub>2</sub>) Stimulus Condition.

(n = 4 for each experimenter)



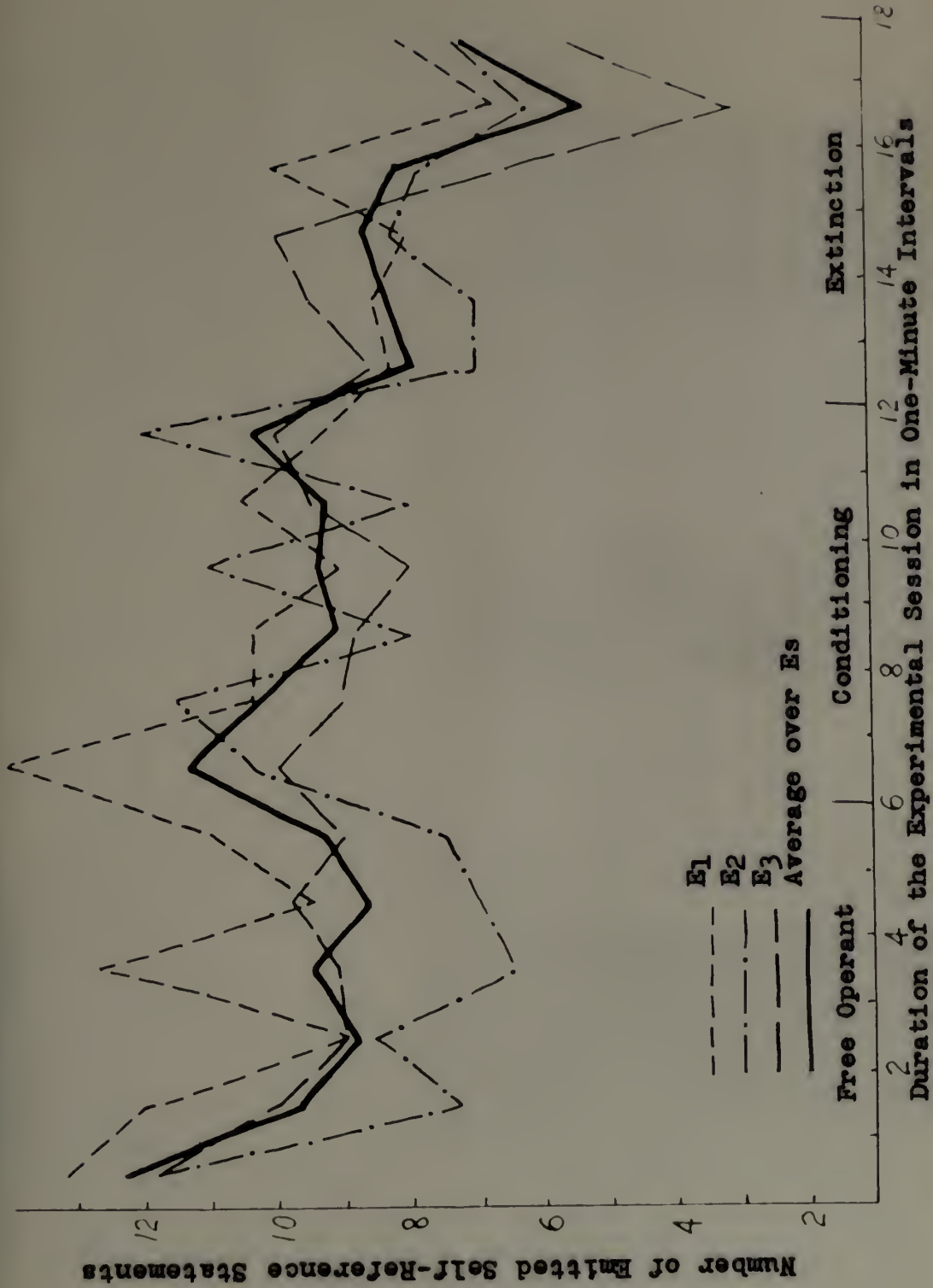


Fig. 5.--Mean Frequencies of Self-Reference Statements Obtained by Each Experimenter (E) for the "Good" (S<sub>3</sub>) Stimulus Condition. (n = 4 for each experimenter)

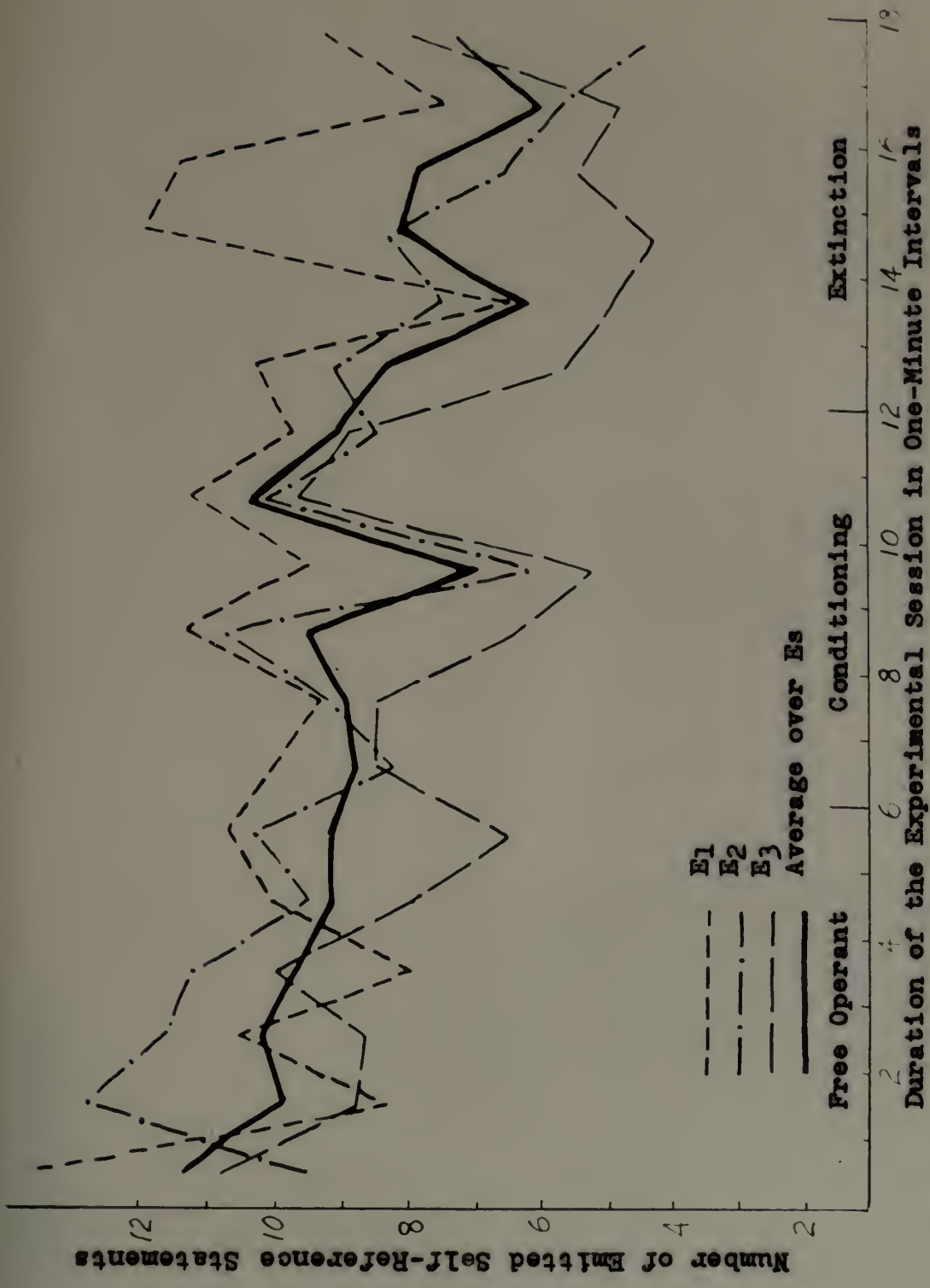
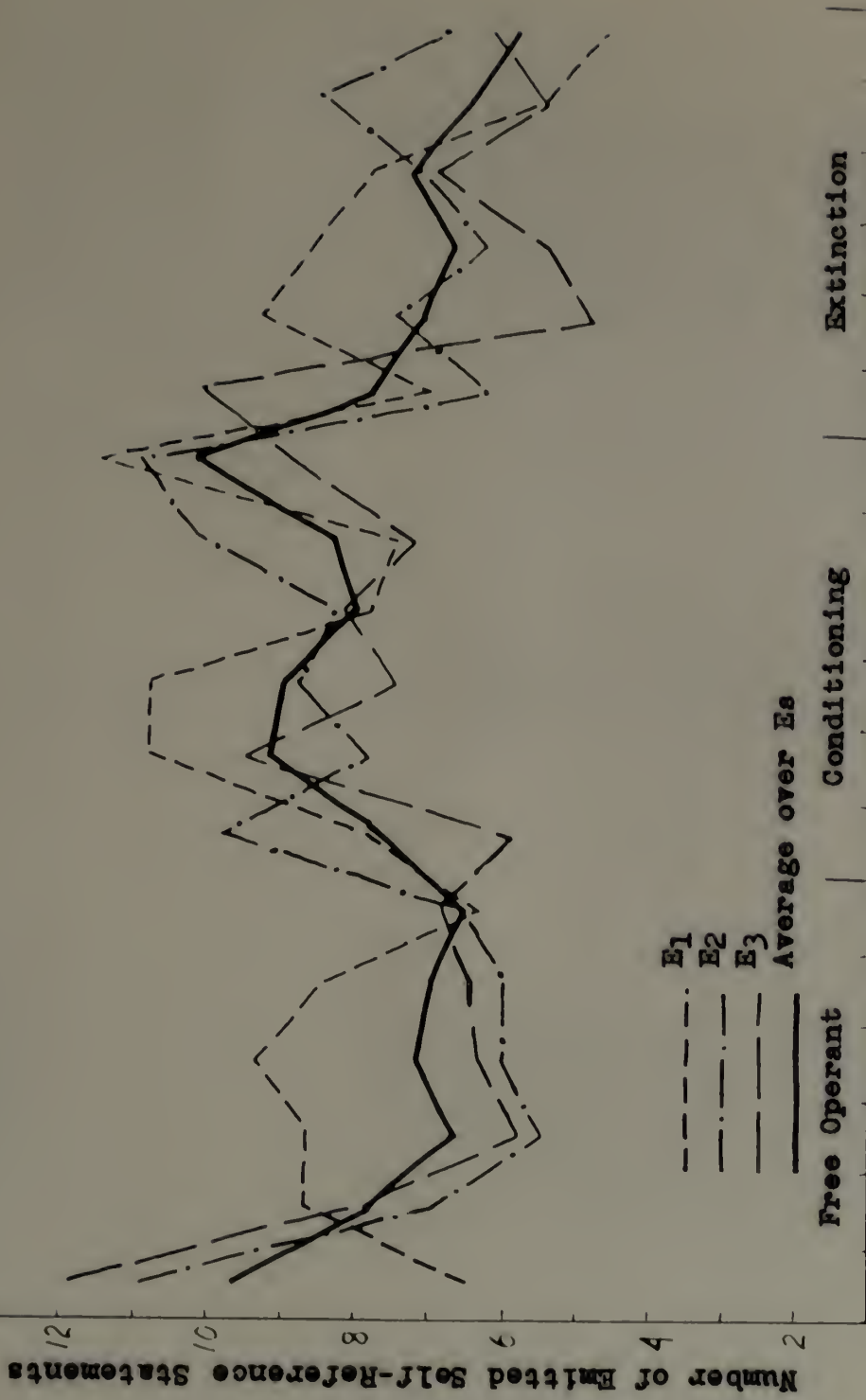


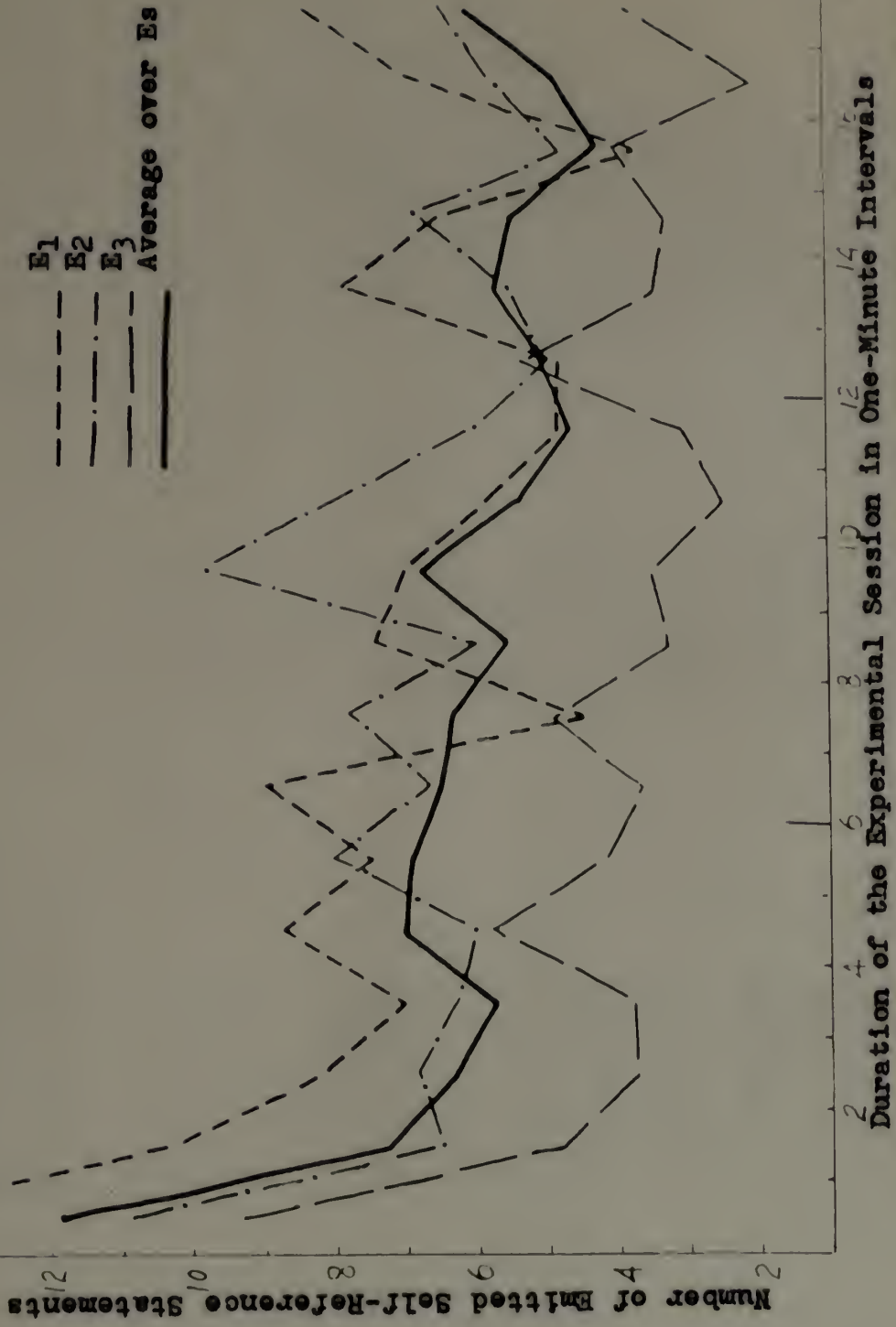
Fig. 6.--Mean Frequencies of Self-Reference Statements Obtained by Each Experimenter (E) for the "I see" (S<sub>U</sub>) Stimulus Condition. (n = 4 for each experimenter)



Duration of the Experimental Session in One-Minute Intervals

Fig. 7.--Mean Frequencies of Self-Reference Statements Obtained by Each Experimenter (E) for the "Paraphrase" ( $S_C$ ) Stimulus Condition. ( $n = 4$  for each experimenter)





Duration of the Experimental Session in One-Minute Intervals

Fig. 8.--Mean Frequencies of Self-Reference Statements Obtained by Each Experimenter (E) for the Control (Sc) Condition.  
(n = 4 for each experimenter)

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