ACQUISITION AND EXTINCTION OF AFFECT, FEEDBACK AND EMPATHY STATEMENTS IN OPERANT GROUPS

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PREFACE

The purpose of this study is to observe over a number of group discussion sessions the acquisition, extinction, and reacquisition of certain complex categories of verbal interaction thought to be therapeutic in nature. These categories include expressions of affect, giving and asking for feedback, and empathy statements. Partial versus continuous reinforcement effects are compared, where feedback is provided by a system of digital counters and lights on the discussion table in front of the subjects in the four-member groups.

The author wishes to express warm regards and heartfelt thanks to his committee chairman, Dr. Don Fromme, for his enthusiasm, assistance and most of all support throughout the planning and execution of this study. Special thanks also go to Ron Duvall who shouldered a heavy burden in lending his time and efforts in valuable assistance toward the completion of the data-gathering phase of the experiment. Appreciation is also expressed to Dr. Barbara Weiner whose help with the statistical procedures was invaluable and to the other committee members whose feedback has been a considerable help in the preparation of this manuscript.

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CHAPTER I

LITERATURE REVIEW

A considerable amount of evidence seems to indicate that psychotherapy on the average does not produce constructive behavioral change. Eysenck (1960) has aptly evidenced this point; and Truax and Carkhuff (1967), in their review of the relevant literature, support the basic finding that

> average counseling and psychotherapy as it is currently practiced does not result in average client improvement greater than that observed in clients who receive no special counseling or psychotherapeutic treatment. [p. 5]

However, an equally basic finding is that at least some therapy is indeed effective, as pointed out by Truax and Mitchell (1971). In fact Bergin (1971) interprets the literature as yielding the general conclusion that on the average, psychotherapy has modestly positive results.

The question that remains is -- what factors do contribute to effective therapy and how can these be used?

Two current approaches to therapy which have attracted a great deal of interest and research are behavior modification, based on principles of general psychology, and group therapeutic techniques.

Behavior modification research has sought to utilize

planned interventions to modify key behaviors which seem to contribute to effective treatment. One group of such endeavors have been the verbal operant conditioning studies. These have had as their goal the modification of various classes of verbal responses as an analogue to the process of verbal interaction in psychotherapy.

Greenspoon (1954) initiated the so-called "free operant" method of verbal conditioning. He asked his subjects to "say all the words that you can think of" and then reinforced with "mm-hmm" a particular class of responses, verbal nouns. The "mm-hmm" served as a generalized reinforcer to strengthen the target response.

Since the early work of Greenspoon, hundreds of studies of verbal conditioning have examined numerous variables -- among them acquisitions, extinction, generalization, the influence of awareness, different tasks presented, response classes targeted, and reinforcement methods. Many reviews have appeared (Krasner, 1958, 1962, 1965; Salzinger, 1959; Greenspoon, 1962; Williams, 1966; Holz and Azrin, 1966; and Hersen, 1967; and Kanfer, 1968).

Verbal Conditioning as an Analogue to Verbal Therapy

The issue of how much verbal conditioning research is related to effective psychotherapy hinges on two questions (1) how similar are the processes and settings involved, and

(2) how does change in verbal behavior mediate constructive change in a client's life style?

The verbal therapy and verbal conditioning situations share many parallel features. Krasner (1965) outlines these features in a review article. He points out that both are artificial situations where a social influence process takes place. Demand characteristics are active where the situation is initially defined by the influencer (experimenter or therapist) and where the influencee takes on role characteristics appropriate to the demands of the initially unstructured situation. Both settings effect change in verbal interactions, and these changes have been shown to be both extensive and long-lasting. And finally, variables active in the interaction process are equally lawful in both settings, though possibly more complex in the therapy situation.

Relevant to this last point, Truax (1966) has analyzed a single long term successful case handled by Carl Rogers to determine whether client improvement was in any way associated with the selective reinforcement of certain response classes by warm and empathetic feedback on the part of the therapist. Rogers (1951, 1957) has argued that empathy and warmth must be nonselective in order to be effective. In reviewing the therapist-client interactions, Truax found five classes of verbalizations on the part of the client to have been selectivly reinforced. Four of these five increased over time in therapy. Three other

classes, not selectively reinforced, did not increase. This study points out the lawfulness of the interaction process, and lends support to a reinforcement interpretation of Rogers' effectiveness as a therapist.

The second question, how verbal behavior change mediates client improvement, is a more complex one. Sometimes the direct goal of therapy is the modification of the verbal behavior of a client. Often disordered verbal behavior itself is the target symptom. Examples of this type of situation are found in the work of Sherman (1965) with long-term mute psychotics; Richard, Dignam, and Horner (1960) and Ayllon and Houghton (1964) with psychotics' use of delusional speech; and Russel, Clark, and van Sommers (1968) with stammerers. Verbal conditioning was employed effectively in each of these studies.

More usually the goal of verbal therapy is not the modification of verbal behavior merely for its own sake. The establishment of a therapeutic relationship along with the client's self exploratory and explanatory verbal behavior serve as means to enable the client to change his behavior and often his environment outside of the session. This is an indirect change, based on the rationale that verbal behavior is symbolic or implicit to other behaviors; and this change is not well understood.

In whatever manner this process of indirect change is conceptualized, research in verbal conditioning has at

least revealed the importance of reinforcement contingencies within the setting which influence various classes of verbal responses.

Response Class

A great variety of response classes have been targeted -- from very specific types of verbalizations, such as plural nouns or words denoting persons, to broader units like expressions of feeling or attitudes. Response classes relevant to this study have been conditioned in quasi-therapeutic settings. These include self-references (Rogers, 1960; Dicken and Fordham, 1967; Phelan, Tang and Hekmat, 1967; Kennedy and Zimmer, 1968; Powell, 1968; Myrick, 1969; and Ince, 1970), affect words or statements (Ullman, Krasner and Collins, 1961; Ullman, Krasner and Gelfand, 1963; Ince, 1968; Merbaum and Lukens, 1968; and Williams and Blanton, 1968), affective self-references (Salzinger and Pisoni, 1960; Merbaum, 1963; Merbaum and Southwell, 1963; Hoffnung, 1969; and Heckmat, 1971), and independence and affection statements (Moos, 1963). Fromme, Whisenant, Susky, and Tedesco (1974) modified affective, feedback, and empathy statements.

Very few of these studies have used the verbal conditioning techniques with deliberate therapeutic intent. Using patients in a hospital setting, Ullman, Krasner, and Collins (1961) found that reinforcing affect words while

telling TAT stories led to increased affective verbalization in a later group therapy session.

The Williams and Blanton (1968) subjects were explicitly told that they had been referred for "psychotherapy." Eighteen non-psychotic patients were assigned to three treatment groups. One group was given usual individual psychotherapy. One group was reinforced verbally for "feeling" statements in individual therapy, the other one for statements without feeling content. After nine sessions the percentage of feeling statements had increased for the group reinforced for that response class and also for the group receiving ordinary psychotherapy. A slight decrease was noticed for the group reinforced for non-feeling statements. Verbal conditioning here was at least as effective as traditional psychotherapy in being able to elicit feeling statements.

Group Therapy

During and immediately after World War II, group therapy evolved because not enough therapists for individual therapy were available. Today, with the ever increasing number of people seeking psychotherapy, group therapy is indeed an economical approach. But the group also has the advantage of providing more persons with whom an individual can interact in a therapeutic way. Yalom (1970) suggests that a group provides a social microcosm which allows for a correctional emotional experience in trying

out new behaviors among peers. Also found in the group setting is the opportunity for one to give help to others, and this Yalom (1970) contends can be therapeutic in itself for the one attempting to assist others. Bednar and Lawlis (1971) in their review of empirical research in group psychotherapy find the results of an increasing number of studies consistent with the view that group therapy is an effective means toward client improvement.

Operant conditioning principles have been applied to group interaction very successfully. Liberman (1970, 1971) made a direct application in studying the development of intermember cohesiveness -- also termed intimacy, solidarity, or affection. In the experimental group the therapist used social reinforcement techniques to facilitate cohesiveness; while in the comparison group, a therapist matched along several traits with the other therapist used a more conventional approach. The experimental group members showed more signs of cohesiveness, independence from the therapist, quicker symptom remission, and greater personality change than did patients in the control group.

Similarly, other verbal response classes have been modified in the group setting: e.g. verbal initiations (Hauserman, Zweback, and Plotkin, 1972), giving opinions (Oakes, 1962), conclusions reached (Oakes, Droge, and August, 1961), and personal or group references (Dinoff, Horner, Kupiewski, Richard, and Timmons, 1960).

Most of the group studies have used the therapist or group leader to reinforce the responses of the group members. However, Wolf (1961) has suggested that the presence of a therapist may lead to an antitherapeutic dependency on the therapist. Furthermore, Salzberg (1961) found that verbal interaction by group members is inversely related to the frequency of the therapist's verbalizations. Of course it is also difficult to control for therapist differences and biasing effects in research. Therapists differ greatly in theoretical orientation and specific techniques and goals, not to mention personality subtleties. Biasing effects may occur as well (though unintentional), when the same therapist participates over several experimental conditions.

It would seem advantageous to replace the therapist with a mechanical feedback apparatus as the reinforcing agent. Thereby, reinforcement could be applied in a more consistent and reliable fashion. Attempts have been made in this regard.

Hastorf (in Krasner and Ullman, 1968) used sets of lights to manipulate successfully the leadership heirarchy of four person groups that were given the task of "solving problems in human relations." Each subject had a red and a green light in front of him. Subjects were told that their green light would go on whenever they made a statement helpful in facilitating the group process and that their red

light would go on when they made statements that would hinder group process. In reality the experimenters controlled the lights in such a way that a target person was manipulated into leading the group.

Krueger (1971) attempted to modify verbal behavior in a therapeutic manner by using light flashes that could be exchanged for primary reinforcers. Using loosely defined verbal response categories with male delinquents, a peer-reinforcement condition increased response rates where reinforcement was administered by one of the group.

Modification of 'Here and Now' Affect, Feedback and Empathy Verbalizations in Leaderless Groups

Truax and Carkhuff (1967) have amassed much support for the contention that interactions characterized by empathy, nonpossessive warmth, and genuineness are the most significant factors related to client improvement in both individual and group psychotherapy. Yalom (1970) has emphasized that group therapy members need to express their feelings toward the others in the group as these feelings arise ('here and now') and provide feedback for each other as they test the appropriateness of their behaviors.

With these curative factors in mind, Fromme, Whisenant, Susky, and Tedesco (1974) sought to use the techniques of verbal conditioning in a group setting to enhance the

interpersonal interaction process. Five categories of verbal response were selected that could be easily and reliably judged. These included 'here and now' expressions of feeling, giving and asking for feedback, and the use of empathy statements. Four person groups of college students were instructed to engage in interpersonal interaction according to these five categories. These instructions were considerably detailed, and a summary of the response categories was listed on an index card in front of each subject as well. Whenever a subject said something that corresponded to one of the reinforceable categories his counter was advanced one digit. The counter made an audible click so the other group members could learn vicariously what was expected from them. If three minutes elapsed in which no one in the group got a click, all four red lights momentarily flashed on. If one member fell behind the person having the highest number of counts by ten, then the light of thatperson who was behind was turned on until he caught up. The groups were given the same instructions and observed for the same period of time. A tally of the number of reinforceable responses was made during observation of the instructions-only control groups and compared with the data from the experimental groups.

Results over one session for each group indicated as predicted that the experimental groups with the feedback apparatus present did emit significantly more of the

categorizeable responses, an average of 9.75 per person in a one hour session. In fact the subjects in the control condition emitted scarcely any responses that would have been reinforceable, 0.85 per person. A test of the reliability of the response categories yielded an index of 93% inter-judge agreement, suggesting that these categories can be reliably judged.

In a partial replication of this study, Fromme and Close (1974) found similar results adding a warm-up procedure to the instructions. Groups with the feedback apparatus averaged 10.04 responses per person; groups without feedback averaged 2.58. The present study used the same instructions, response categories and apparatus as the Fromme et al. studies and included warm-up procedures prior to the initial session.

A major finding of the Fromme et al. studies was that detailed instructions and warm-up alone were not sufficient in evoking any extensive use of the response categories. This seemed closely related to the structure of the task presented to the subjects and the amount of information and incentive provided in the experimental and control conditions respectively.

Sources of Information and Incentive

Nearly all of the verbal conditioning studies to date have been designed in such a way that subjects were given

no prior knowledge of the response-reinforcement contingencies. Because many subjects have gained some awareness of these contingencies during the course of such studies, a controversy has arisen as to whether awareness is necessary for verbal conditioning to take place. Considerable evidence has been marshalled in support of the opposing views (see Kanfer, 1968 and Speilberger and DeNike, 1966 for reviews).

However Fromme et al. sought to make each subject aware of the desired response categories. In this respect their method differed greatly from the traditional verbal conditioning paradigm.

From the cognitive viewpoint, which stresses the importance of awareness and intention, the verbal conditioning experiment is seen as a problem-solving situation in which a task is presented and various sources of information and incentive are inherent. As stated by Dulany (1962): "a human subject does what he thinks he is supposed to do (awareness) if he wants to (intention) . . . [p. 109]."

Instructions, application of reinforcement, and modeling effects are the three most important sources of information and incentive found in the Fromme et al. studies and the present one.

Whalen (1969) demonstrated the importance of modeling and detailed instructions in eliciting interpersonal openness from subjects in a group setting. With no reinforcement

given during the sessions, the 128 subjects were divided into groups under four conditions. Under two conditions the groups were shown a film of four people interacting in an open interpersonal manner. One of these groups was given detailed exhortative and descriptive instructions. Two more groups were given the same detailed and minimal instructions respectively but were not shown the film modeling the desired behavior. Results indicated that only subjects in the group that were exposed to both film model and the detailed instructions tended to engage in interpersonal openness as defined within fourteen inclusive response categories of verbal group participation.

In the Fromme et al. studies, the detailed instructions served both an exhortative and descriptive function. They were designed both to initiate or facilitate intention to perform and to direct the subjects' attention to the content of the response categories, thereby maximizing awareness. Modeling effects are presumed to have been present in the examples (symbolic models) mentioned within the instructions and in the opportunity for the subjects to observe others' use of the response categories.

And yet without the feedback apparatus present, groups scarcely made any use of the response categories. Detailed instructions may have been ineffective due to the complex and relatively novel nature of the response categories. Indeed subjects were likely feeling embarrassed and possibly

threatened when instructed to engage in an open and personal discussion with strangers.

Reinforcement of the correct responses in these studies served an important informational function. Skinner, in a personal communication cited in a paper by Matarazzo, Saslow, and Pareis (1960) considers the response plus the reinforcement act a discriminative stimulus, conveying primarily information to the subjects. Another function of the feedback apparatus was motivational in the usual sense of 'reinforcement.' Also the counters and lights, visible to all the subjects, made the situation a competitive one and kept the subjects mindful of the experimenter's earlier exhortations.

The results of numerous studies in Marlatt's (1972) review provide evidence for the varying effects of instructions, modeling, and reinforcement (vicarious and direct) on the modification of verbal behavior within different tasks.

Acquisition and Extinction in Verbal Conditioning

Early studies using verbal conditioning and relatively simple response classes with individual subjects have yielded acquision and extinction curves on various schedules of reinforcement very similar to those typical for operant conditioning with animals. Acquisition and

extinction proceeded quickly when a continuous reinforcement schedule was used. Partial reinforcement required more trials but fewer reinforcements in acquisition; and extinction was retarded; fixed-ratio schedules of reinforcement sustained responding quite well (Kanfer, 1954, 1958; Fattu and Mech, 1955; Weiss, Krasner, and Ullman, 1960; Grant, Hake, and Hornseth, 1961; Spivak and Papajohn, 1957; and Webb, 1963).

Results have been more varied when complex responses have been studied. Salzinger and Pisoni conditioned self-references in an interview situation with schizophrenics (1958) and normals (1960). The response class was all statements beginning with the pronouns "I" or "we" and followed by an expression of affect. Verbal agreement "mmhm," "I see," or "yeah" was used for reinforcement. A continuous reinforcement schedule was used and acquisition and extinction were complete within one session (30 minutes). A linear relationship was found between number of reinforcements and number of responses in extinction.

Williams and Blanton (1968) used the same response class however, and found that acquisition was quite gradual and occurred as a function of several sessions. Again with the same response class, Heckmat (1971) compared intermittent and continuous reinforcement schedules in an interview situation. In the continuous reinforcement condition, acquisition and extinction were similar to that found by

Salzinger and Pisoni (1960). Intermittent schedules (FR 2:1) demonstrated no significant effect on rate of acquisition but were shown to be significantly more resistant to extinction. Phelan, Tang, and Hekmat (1967) found similar results with extinction of self-reference statements, but acquisition was retarded with intermittent reinforcement.

Moos (1963) conditioned independence and affection statements in an interview situation with head not and "mm-hmm" as reinforcers. An extinction session 24 hours after conditioning showed no evidence of an extinction effect. Rogers (1960) conditioned positive self-references and found extinction to be very gradual.

It is reasonable to assume that when cognitive variables such as awareness are properly identified, the shape of the extinction curves in many areas of human research might be found to be quite different from those often published in animal studies. When subjects are 'aware' of the response-reinforcement contingency, it may be that their intentions are the major factor in whether or not a response extinguishes at all.

Although 'awareness' has rarely been adequately measured in the studies of extinction effects, the results of some studies indicate that this may be of great importance. Ince (1970) employed various ratio schedules of reinforcement with a single subject to modify the rate of emission of positive self-reference statements in an interview situation.

Over 60 sessions were spent with the one female subject; and the target response frequency increased regularly, a fixed ratio (9:1) schedule producing a high rate of responding. Baserate level responding, however, occurred immediately after reinforcement was discontinued. Awareness seemed a potent factor but was not measured with any degree of care.

Jacobson (1969) studied awareness as a factor influencing acquisition and extinction of performance on creative problem solving tasks. Results showed that 'aware' subjects extinguished almost immediately. Spence (1966) described similar extinction effects in the results of human classical conditioning.

Hekmat (1970) tested for awareness and found no relationship between extinction and level of insight. His results showed that in fact awareness itself may be extinquishable, especially where the correct response is hard to discriminate.

Fromme et al. (1974) felt that in group interactions an intrinsic pattern of social reinforcement might maintain response level during extinction trials.

The Present Study

The purpose of the present study was to observe acquisition and extinction of certain verbal responses over a number of group therapy-like sessions. Because it appears

desireable to reduce the goals of group therapy to some observable sub-goals, response categories were chosen which seemed therapeutic in nature and of some universality in terms of generally adaptive interpersonal behavior. Instructions were highly detailed in order to facilitate awareness, and mechanical counters and lights were used to provide reinforcement and discriminative cues to increase response rate. In general, the group method of Fromme et al. (1974) was used; but modifications in procedure were implemented in order to compare the effects of partial vs. continuous reinforcement in an acquisition, extinction, reacquisition design.

An important characteristic of any therapeutic modification of behavior is whether or not it is resistant to extinction or can be made so. If not, its usefulness is severely limited. Using complex categories of verbal response where 'awarenesss' is enhanced through detailed instructions, it is not clear how extinction may proceed. The present study is exploratory and innovative in attempting to shed light on this process.

CHAPTER II

METHOD

Subjects

Subjects were 8 undergraudates enrolled in an intermediate level Psychology course. An initial pool of some 50 volunteers was reduced to 10 whose schedules mutually permitted nine one hour sessions evenly spaced over a period of three weeks. Only subjects with no previous acquaintanceship other than minimal class contact were included. Due to the preponderance of males in this later pool of subjects, it was decided that each of the two experimental groups would be made up of three males and one female, all randomly assigned to their respective groups.

A coin toss determined which group would receive partial reinforcement. The resulting two groups were labelled according to one of two experimental conditions -- partial reinforcement (PRF) and continuous reinforcement (CRF).

All subjects were interviewed in some depth in order to gain assurance that they would commit themselves to appear for all nine sessions. 100 points of class credit

were given to each for his participation in the study (800 points were required for an "A" in the course).

Apparatus

The experimental room was nine feet by fifteen feet with a one-way mirror centered in one of the fifteen foot walls. Subjects were seated in a semicircular arrangement around a small table, facing the one-way mirror. Each session's conversation was video-tape recorded and simultaneously monitored by the experimenter via the one-way mirror and a microphone on the discussion table. A four channel relay control panel, with push buttons operating a multiple event recorder, was used to record those instances where the experimenter judged that a group member's statement fit one of the reinforceable categories. When reinforcement was applied, a digital counter placed in front of each subject was advanced, producing an audible click. A red light attached to each subject's counter was used to provide two additional types of discriminative cues in sessions where feedback was provided: 1. all four lights were automatically flashed by an interval timer at the control panel whenever three minutes elapsed with no reinforceable responses having been made; 2. a subject's light was switched on whenever he fell ten or more responses behind the subject with the highest count, remaining lit until he caught up.

Response Categories

Response categories were chosen to include the expression of current feelings, seeking others' expression of feelings, giving and asking for feedback on current behavior, and the use of empathy statements. Five categories were used, operationally defined as follows:

1. Any verbal expression of one's current feelings as ellicited by members of the group. This expression must be explicit and cannot merely be implied in order to fit the category. It does not count for a group member to express a feeling, even a current feeling that was produced by an outside party. This definition also excludes cognitive, conative, and perceptual state verbalizations such as, "I think," "I wish," or "I hope."

2. Asking for information from another group member regarding his feelings as defined in Category 1.

3. Seeking information in regard to the effects of one's own behavior on the feelings of the rest of the group members.

4. Statements made to another group member describing or labeling one's own perception of that group member's current behavior or the group's behavior in general.

5. Empathy -- any attempt to clarify, by means of verbal labelling, the expressed feeling states (as defined in category 1.) of another individual in regard to what transpires in the current situation.

In the sequence of interactions, only those statements that added or sought new or additional information about the current situation and accompanying subjective states were defined as reinforceable. Current situation was defined as including only those 60 minutes of interaction per session.

Instruction cards (Appendix A) summarizing the five response categories were taped to the discussion table in front of each subject.

Procedure

Each group met separately for nine 60 minute sessions spaced over a period of three weeks. The PRF group met on Mondays, Wednesdays, and Fridays; the CRF group met on Tuesdays, Thursdays, and Saturdays. The nine sessions were divided into four phases of the experiment. Session one was labelled the 'baseline' phase. Sessions 2-4 were termed the 'acquisition' phase, sessions 5-7 'extinction,' and 8-9 'reacquisition.'

During the baseline session neither group received reinforcement, whereas in the first acquisition session both received continuous (100%) reinforcement -- a person's digital counter was advanced each time he made a statement that fit one of the five categories. However in the next two acquisition sessions the PRF group received 67% and 33% reinforcement respectively. During the reacquisition phase, the PRF group received 67% reinforcement for the first

session and 33% for the remaining reacquisition session. Variable ratio schedules (Appendix B) were generated mathematically for each PRF subject by means of a random number table. The CRF group received continuous reinforcement throughout the acquisition and reacquisition phases of the experiment. It should be noted that per cent reinforcement applies only to the feedback provided by the digital counters and did not affect the operation of the feedback lights. Neither feedback technique was used during the 'extinction' phase, nor was the apparatus present on the discussion table.

During the partial reinforcement sessions, it was impossible for the experimenter to operate the panel of switches used to advance the subjects' counters as well as monitor the conversation and operate the main control panel. Therefore, during these sessions an assistant followed each subject's reinforcement schedule and advanced the proper counter when appropriate. The experimenter would signal the assistant with a verbal cue (the subject's seat number) when a statement was made that fit one of the categories. The assistant then checked that person's schedule and advanced his counter if a reinforcement was called for. With practice the delay of reinforcement caused by this operation stabilized at between one and two seconds, although proper anticipation often reduced this considerably. This delay was measured with a stopwatch during practice sessions.

Instructions

After being seated prior to sessions one and two, the subjects were given detailed instructions (Appendix C) suggesting the social desireability of sharing one's feelings, being empathetic and providing feedback. Definitions of each of the response categories were explained with illustrative examples. The general task was explained as 'getting to know one another on a personal basis,' and the subjects were requested to express themselves by making use of the response categories. Finally they were informed of being monitored and observed.

In session two where feedback was provided, an explaination of the meaning and function of the feedback apparatus was given. For the remaining sessions, subjects were given brief instructions reminding them of their task; and where appropriate they were informed of any change in feedback procedure (extinction and partial reinforcement).

A warm-up procedure similar to that used by Fromme and Close (1974) was conducted prior to the initial session. The subjects were paired up and asked to hold hands and look into each other's eyes for a short while and then verbalize current affective states. Replies were then evaluated in terms of the response categories to provide a brief learning experience whereby the response categories could be more easily recognized.

At the end of each session the subjects filled out a

five item questionnaire (Appendix D) designed to measure subjective perceptions of their own behavior and feelings during the session.

Scorer Reliability

A realiability check was made between the experimenter, who recorded all reinforceable responses in this study, and another scorer who used the same category system in a later study.

Video-tapes of the first acquisition session of each group were used. This material was divided into scoreable units (complete thoughts) of which 868 units were numbered and independently judged by each scorer as to whether or not they fit one of the response categories. There were disagreements on 39 of these units yielding a reliability of 96%. It should be noted that it was not necessary to determine agreement on individual categories because in the actual experiment this discrimination was not made.

FIRO-B Compatibility

FIRO-B scores were available for each of the eight subjects. As an afterthought, a check of overall FIRO-B compatibility of each group was made subsequent to the experiment. The procedure of Fromme and Close (1974) was used, yielding a combined compatibility score for each interpersonal area of the FIRO-B (Inclusion, Control, and

Affection). This score, averaged across each possible interaction dyad and the three compability indices provided by Schutz (1966) can vary from zero (greatest compatibility) to eighteen (greatest incompatibility).

Both groups were moderately compatible in each interpersonal area. In the Inclusion area the group scores were PRF, 7.06 and CRF, 5.11. In the Control area the scores were PRF, 6.22 and CRF, 7.94. In the Affection area the scores were PRF, 5.44 and CRF, 6.05.

It should be noted that in the Control and Affection areas Fromme and Close (1974) found greater compatibility to have a significant positive influence on the use of the present response categories for groups meeting a single session. The PRF group in the present study was somewhat more compatible in these areas, but this factor cannot be statistically clarified.

CHAPTER III

RESULTS

Statistical Procedures

Individual totals in session by session use of the response categories are found in Table V (Appendix E). Group means are illustrated in Figure 1.

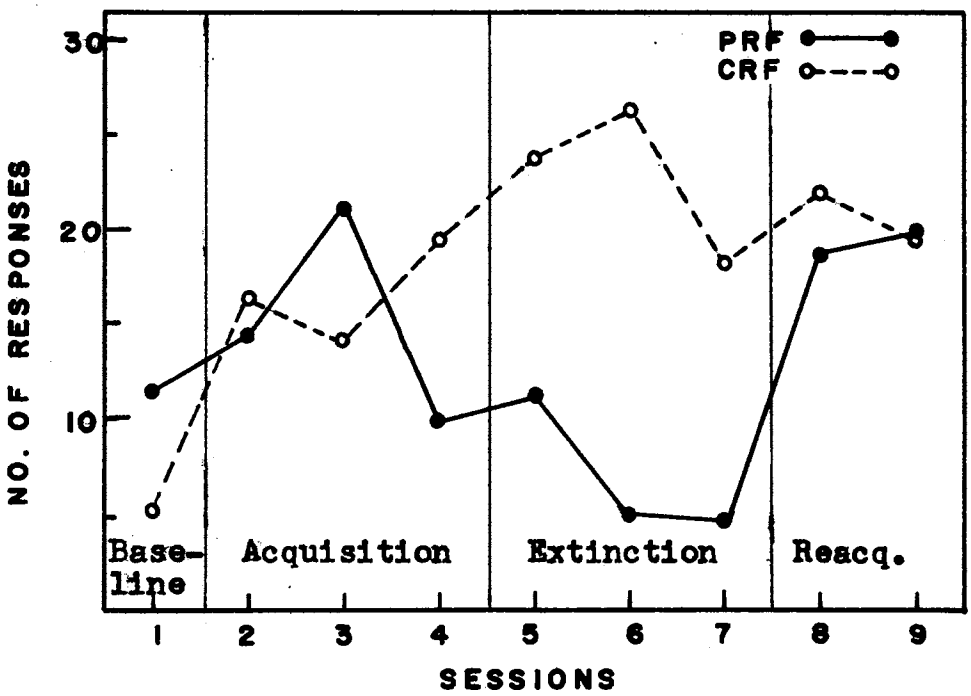

Figure 1. Mean Number of Reinforceable Responses Per Group Session

There were four phases in the study. The first two phases, baseline and acquisition, covered the first four sessions for each group (Figure 1). Subjects' individual response totals for these sessions were analyzed by means of a 2 x 4 repeated measures analysis of variance (AOV) with repeated measures on the four sessions (Table I).

TABLE I

ANALYSIS OF VARIANCE: BASELINE AND ACQUISITION RESPONSES, 2x4

Source	df		MS	F	
	Usual	Conser.		U	C
Between Ss					
Group (A)	1		2.531	0.07	
Ss W. Grps.	6		229.187		
Within Ss					
Session (B)	3	1	113.115	5.88***	*
A x B	3	1	128.115	6.66***	**
B x Ss W. Grps.	18	6	19.225		

Usual df - (U)
Conser. df - (C)

*p<.06 , **p<.05 , ***p<.01

Subjects' totals for the three sessions in the extinction phase were analyzed by means of a 2x3 repeated measures

AOV with repeated measures on the three sessions (summarized in Table II).

TABLE II

ANALYSIS OF VARIANCE: EXTINCTION RESPONSES, 2x3

Source	df Usual	df Conser.	MS	F U	F C
Between Ss					
Group (A)	1		1457.042	13.56**	*
Ss W. Grps.	6		107.486		
Within Ss					
Session (B)	2	1	81.500	2.18	
A x B	2	1	48.666	1.30	
B x Ss W. Grps.	12	6	37.361		

Usual df - (U)
Conser. df - (C)

*p .02 , **p .01

For the two sessions of the reacquisition phase, subjects' totals were analyzed by means of a 2 x 2 repeated measures AOV with repeated measures on the reacquisition sessions (summarized in Table III).

In each of these AOV's the A factor was the two groups and the B factor was the particular sessions.

An additional overall AOV was conducted using subject means computed for each phase of the experiment. These were analyzed using a 2 x 4 repeated measures AOV with repeated measures on the four phases (summarized in Table IV).

TABLE III

ANALYSIS OF VARIANCE: REACQUISITION RESPONSES, 2x2

Source	df		MS	F
	Usual	Conser.		
Between Ss				
Group (A)	1		30.25	0.51
Ss W. Grps.	6		59.79	
Within Ss				
Session (B)	1	1	2.25	0.49
A x B	1	1	1.00	0.22
B x Ss W. Grps.	6	6	4.62	

It should be noted that randomization of the repeated factor (sessions or phases) was not possible. Carry-over effects from session to session were important and desireable. Social influence factors were also active during the group meetings; one subject's performance tended to influence the output of others in the group. Due to these

necessary and important factors influencing subject performance, the independence of errors assumption required by the statistical model was probably violated. Therefore F tests of the B factors and of interactions involving those factors were made using conservative degrees of freedom (Greenhouse and Geisser, 1958). Furthermore, due to the exploratory nature of this study and the small number of subjects, significance is reported at $p<.10$ as well as at more conventional levels.

TABLE IV

ANALYSIS OF VARIANCE: SUBJECT MEANS FOR BASELINE, ACQUISITION, EXTINCTION, AND REACQUISITION, 2x4

Source	df Usual	df Conser.	MS	F U	F C
Between Ss					
Group (A)	1		66.18	1.52	
Ss W. Grps.	6		43.45		
Within Ss					
Phase (B)	3	1	187.03	10.96**	*
A x B	3	1	178.27	10.44**	*
B x Ss W. Grps.	18	6	17.07		

Usual df - (U)
Conser. df - (C)

*p<.05, **p<.01

A few planned comparisons were conducted and are reported with conservative degrees of freedom. Tukey's HSD procedure was used in making post hoc comparisons of means.

Responses to each item of the questionnaire were given a numerical value (see Appendix D) and were treated as five additional dependent variables. These were analyzed in the same manner as the primary reponse measure and with post-hoc *t* tests. Significant *F* values will be reported at $p<.10$ with conservative and usual degrees of freedom; *t* values will be reported at $p<.05$. Where the error term in the denominator of these *t* ratios was *MS B x Ss W. Grps.*, conservative degrees of freedom were used. When the error terms was *MS W. Cell*, a conservative significance level for pooled error terms was employed (Cochran and Cox, 1957).

Each subject's responses to the questionnaire items are found in Tables VI-X (Appendix F).

Results

The AOV for baseline and acquisition phases of the study yielded significant results for the session factor and groups x session interaction (Table I). To assist in interpretation of these results, tests of simple main effects revealed significant group differences at session one ($F=4.385$, conser. $df=1/6$, $p<.10$) and at session four ($F=7.53$, conser. $df=1/6$, $p<.05$). The PRF group outperformed the CRF group during the baseline session; however, the reverse was true as session four where the PRF group

received 33% reinforcement. Simple effects tests also revealed significant differences among the four sessions for each group (F's=7.936 & 6.663, conser. df=1/6, $p<.05$). Further information resulted from two planned comparisons among means of each group's baseline session vs. the average of the three. For the CRF group, the average of the three acquisition session means was significantly greater than the baseline mean (t=4.57, conser. df=6, $p<.005$ one-tailed); for the PRF group no significant difference was found (t=1.05, conser. df=6, one-tailed).

For the baseline and acquisition sessions, the AOV for item 1. of the questionnaire -- "To what extent did you understand the precise meaning of the response categories?" -- yielded a significant sessions effect (F=4.69, usual df $p<.05$, conser. df $p<.10$). There was a significant increase in reported understanding of the response categories over these sessions. For item 5 of the questionnaire -- "To what extent was this session a worthwhile experience for you?" -- the AOV resulted in a significant session effect (F=4.14, usual df $p<.05$, conser. df $p<.10$). There was no distinct trend to this variability. However, the PRF group reported session four (33% reinforcement) to be less worthwhile than the previous three sessions. A post hoc comparison among means resulted in significance at $p<.02$ (t=3.30, conser. df 6, two-tailed).

During extinction, the CRF group made significantly more use of the response categories than the PRF group

($p<.02$, Table II). In fact the CRF group's average number of responses for the first two sessions of the extinction phase were the highest achieved during the experiment (Appendix E). Post hoc comparisons revealed that the mean for the CRF group in session three of the extinction phase was not significantly different from the average of the first two extinction sessions.

Within the extinction phase of the experiment, the AOV for responses to item 4 of the questionnaire -- "To what extent did you enjoy using the response categories in interacting with the others?" -- resulted in a significant sessions effect ($F=4.84$, usual df $p<.05$, conser. df $p<.10$). Reported enjoyment decreased over these sessions, reaching its lowest level for the CRF at the third extinction session. For the CRF group this level was significantly lower than for the average of the previous two extinction sessions in a post-hoc comparison among means ($t=3.29$, conser. $df=6$, $p<.02$).

In extinction for responses to item 5 of the questionnaire (worthwileness), the AOV resulted in a significant group effect ($F=7.54$, $df=1/6$, $p<.05$) and a significant sessions effect ($F=23.47$, conser. $df=1/6$, $p<.01$). Reported worthwhileness of the sessions decreased during the extinction phase with the CRF group reporting a consistently higher level than the PRF group.

For the reacquisition phase the AOV for the primary response measure yielded no significant results (Table III).

In the reacquisition phase for responses to item three of the questionnaire -- "How hard did you try. . . ?" -- the AOV resulted in a significant group effect (F=6.23, df-1/6, p<.05), a significant sessions effect (F=10.71, conser. df= 1/6, p<.05), and a significant interaction effect (F=21.0, conser. df=1/6, p<.01). The reported PRF group level was consistently higher than that of the CRF group and increased across the two reacquisition sessions. The lower reported level for the CRF group decreased across the two sessions.

The overall AOV of individual subjects' mean use of the response categories for each phase of the experiment (Table IV) resulted in a significant phase effect and a significant phase x group interaction. Four planned t tests were conducted comparing the average of these means for the PRF group, extinction phase vs. baseline and extinction vs acquisition, and for the CRF group, extinction phase vs. baseline and extinction vs. acquisition. The PRF group's extinction average was lower than its baseline average t= =2.77, conser. df=6, p<.05); and the CRF group's extinction average was higher than its baseline average (t=5.96, conser. df=6, p<.002). Results of the other two planned comparisons were non-significant.

Two Tukey's HSD pair-wise comparisons were significant. The PRF group's reacquisition average was greater than its extinction average (p<.01), and the CRF group's reacquisition average was greater than it's baseline average (p<.05).

Critical distances (q=4, conser. df=6) was 10.12 for p<.05 and 14.52 for p<.01.

The groups x phases AOV for questionnaire item 1 (understanding) resulted in a significant phases factor (F=4.86, usual df=3/18 p<.05, conser. df=1/6 p<.10). Reported understanding of the response categories increased over the four phases of the experiment. The AOV for item 3 (trying) resulted in a significant group factor (F=7.07, df=1/6, p<.05) and a significant phases x group interaction (F=6.82, usual df=3/18 p<.01, conser. df p<.05). The PRF group reported a higher level of "trying hard" than the CRF group reported. Simple main effects tests yielded no significant results to clarify the interaction effects.

Correlation of Questionnaire Responses with Subjects' Use of the Primary Response Categories

The subjects' response totals were correlated with scores on the questionnaire items for each session. These correlations (Pearson r) were then Z-transformed, averaged across sessions and converted back to original form. The mean correlation for questionnaire item 1 was .205; for item 2, .274; for item 3, .256; item 4, .105; and item 5, .395. None of these were significant (df=6), but item 5 (worthwileness of the session) was overall most closely associated with use of the response categories. Item 4

(enjoyment) was least related. The correlation of item 1 (understanding of the response categories) over the acquisition and extinction sessions, however, reached .433. Due to the small n, these correlation measures are of heuristic value only.

CHAPTER IV

DISCUSSION

Baseline response totals were much greater than those reported in Fromme et al. (1974) and Fromme and Close (1974) where non-reinforcement groups averaged 0.89 and 2.58 responses per person respectively. Although procedures were similar, subjects in the current study were believed to have been much more sophisticated and task oriented than the Introductory Psychology students used in the previous studies. The subjects in the present study were enrolled in a more advanced Psychology course and received considerably more course credit for their participation. Also they were faced with the commitment to meet for nine sessions with the same group members. Presumably they took the task far more seriously.

The PRF subjects made more extensive use of the response categories during the baseline session than did the CRF group. Two further sources of information indicates that this group was more task-oriented than the CRF group. First of all, one of the PRF subjects' response total was considerably higher than all others in session one (Appendix E); and he was observed to be particularly task-oriented.

He frequently provided feedback to the others and urged them to use the response categories. His comments seemed to serve the same purpose as the feedback lights and counters which were present during the acquisition sessions. Secondly the PRF group rated themselves in terms of "trying hard" much higher than the CRF group rated themselves.

The CRF group significantly raised its per person response rate during the acquisition sessions, showing a marked conditioning effect on a continuous reinforcement schedule. The PRF group, on the other hand, peaked during session three in which a variable ratio reinforcement schedule of 66% was applied. Response rate then dropped off sharply on the 33% reinforcement schedule of session four. This level of responding, below baseline, masked the increases of the previous two sessions and prevented the conditioning effect from reaching significance.

Although as expected both groups reported a steady increase in their reported understanding of the response categories across the first four session, it is clear that the PRF group had considerable difficulty using the response categories under the reduced feedback conditions of session four. The PRF subjects reported that they did not try as hard during this session as they had for the previous three sessions. This comparison barely missed reaching significance with conservative degrees of freedeom at $p<.05$ and was not reported due to the post hoc nature of the t test used.

Because they reported understanding the response categories well and having a high desire or intention to use the response categories, the insufficient reinforcement provided by the feedback apparatus is clearly indicated as contributing to their poor performance. The subjects also reported this session to have been significantly less worthwhile than the previous sessions.

Another factor which may have contributed to variability in performance for both groups during acquisition is the use of the feedback lights. During the three acquisition sessions yielding the highest number of responses (Appendix E), one or more persons had had their lights turned on because their totals were ten below the person having the highest total. These lights were left on for varying periods of time according to the subject's response total and seemed to have quite an inspiring effect on the group's performance as observed by the experimenter. This was observed to be less true where it occurred in the later reacquisition sessions.

In the extinction phase of the experiment the two groups varied significantly. Whereas partial reinforcement usually has increased resistance to extinction in operant conditioning studies, this did not occur in the present study. In fact, at first glance the reverse appeared to have happened. The CRF group's response rate continued to rise, only to drop off non-significantly in the third extinction

session. No extinction effect appeared. The average per person response rate during the extinction phase for the CRF group (22.67) was about equal to the therapist plus feedback condition in the Fromme et al. (1974) study. That mean was 23.25.

The performance of the PRF group, on the other hand, steadily declined to a point far below its baseline. However this did not appear to be a typical extinction effect since the effects of any acquisition did not show up in performance under the 33% reinforcement schedule of session four.

Fromme et al. (1974) stated their opinion that an intrinsic pattern of social reinforcement may develop when the response categories are used in group interactions. Whether or not this occurs seems to be an important issue when viewing the discrepancies between the two groups of the present study during the extinction phase.

The CRF group reached high points in use of the response categories and reported enjoyment and worthwhileness for the first two extinction sessions, presumably due to an intrinsically reinforcing property of the interaction. On the other hand the PRF group during extinction lacked any of the previous task orientation it had demonstrated and appeared discouraged. Reported enjoyment and worthwhileness of the sessions steadily declined for this group. Also the experimenter observed occasional active attempts to <u>avoid</u> use of the response categories as if there were something aversive

about social interaction of the nature requested in the experiment. This observation seems to conflict with the notion of an intrinsic social reinforcement process.

Evidently there was a good deal of ambivalence associated with making statements that fit the response categories. This could be observed throughout the study in the interaction of both groups. Periods of great task orientation were inter-mixed with periods of relative inactivity and often conversation wholly unrelated to the kind of personal discussion requested. Statements intended to fit one of the categories often fell short due to a negation of feeling or attempts to put the subject matter at a distinace and out of the here and now. On the other hand, when reinforceable statements were made and directly responded to by a group member with yet other reinforceable statements, it seemed that avoidance attempts became less frequent. This indeed seemed to be happening in the CRF group during the extinction sessions. And these sessions were characterized by a very high rate of responding and a very personal discussion. The PRF group's ambivalence, however, became discouragement and response totals plummeted. This quite possibly was due to the fewer number of mechanical reinforcements which may have reduced responding to a point where no pattern of social reinforcement could develop.

Though it seems that some pattern of social reinforcement did maintain and in fact increase responding for the

CRF group during the first two extinction sessions, there is some evidence to suggest that it was somewhat unproductive. The CRF group reported a decline in worthwhileness and enjoyment of the third extinction session and during this session vocally expressed discouragement at their inability to "get anywhere" with the discussion. Although the experimental procedures had produced a high rate of responding and a very personal discussion, the interaction seemed to lack direction or some sort of therapeutic goal. The CRF group members spent a good portion of the third extinction session trying unsuccessfully to deal with and bring some closure to the discussion of the previous session; much of their interaction therefore was not strictly in the 'here and now' as defined in the response categories. There seemed a great need for a skilled therapist to help guide the discussion in a more beneficial direction.

Reacquisition brought both groups to an equal rate of responding. A definite acquisition effect resulted for the PRF group suggesting carry-over effects from the previous acquisition sessions. It seems that prior learning had summated to a point where the response rate could then be maintained on the 33% reinforcement schedule. The PRF group again 'tried hard' to use the response categories and at first session of reacquisition reported a high level of enjoyment using the response categories. For both groups, however, a decline in reported enjoyment and worthwhileness

of using the response categories over the reacquisition phase suggested again the need for a therapist to help guide the interaction.

CHAPTER V

CONCLUSIONS AND IMPLICATIONS

In general, results from this study suggest four major conclusions.

1. The experimental procedures employed can produce a high rate of responding according to the response categories, and this can be accomplished in a short amount of time (three sessions) when acquisition occurs under a continuous reinforcement schedule.

2. Acquisition on the partial reinforcement schedules used in this study was difficult, indicating too sharp a reduction in percentage of reinforcement. This led to poor performance in the extinction phase for the group receiving partial reinforcement.

3. Because no extinction effect was observed for the group on continuous reinforcement, partial reinforcement was at best unnecessary for the purpose of increasing resistance to extinction. Findings suggest that a pattern of social reinforcement developed for the continuous reinforcement group and maintained responding during the extinction phase.

4. Though the feedback operations produced a high rate of responding, there appeared the need for some sort of

therapeutic direction to enhance the very personal discussion generated.

Implications

The present study suggests taht as a therapeutic tool, these behavior modification procedures show great promise. Far from replacing the therapist, these procedures may provide a much needed tool that can be used by the therapist to improve interaction during the early phases of group therapy.

It has been shown that under certain conditions these types of responses are quite resistant to extinction. Whether or not some intrinsic pattern of social reinforcement causes this, it is clear that the results of the present study do not clearly conform to the typical operant paradigm. The implications for general behavior theory are that much further research is needed in order to parcel out the situational factors and general laws influencing complex verbal responding under conditions of high 'awareness' and in a socially potent atmosphere.

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APPENDIX A

BASIC INSTRUCTION CARDS

CATEGORY 1. Any verbal expression of your current feelings resulting from interaction with the group.

CATEGORY 2. Seeking information from another group member regarding his feelings.

CATEGORY 3. Seeking information regarding you own behavior.

CATEGORY 4. Statements to another group member regarding your perception of his behavior.

CATEGORY 5. Any attempt to clarify the expressed feelings of another person.

HERE & NOW

APPENDIX B

SAMPLE VARIABLE RATIO SCHEDULES

66%

1 0 1 1 0 1 1 1 1 0 0 1 0 1 1 1 1 1 0 1 1 0 0 1 1 1 0 1 1 0

2 2 2 0 2 0 0 2 2 0 0 2 2 2 2 2 2 0 2 0 0 2 2 2 0 2 0 2 2 2

0 3 3 3 3 0 3 0 3 3 3 0 3 3 3 3 3 0 3 3 0 0 3 3 0 3 3 3 0 0

4 4 0 0 4 4 4 4 4 4 4 0 4 0 4 4 0 4 0 4 4 4 4 0 0 4 4 0 4 0 4

(Each space represents a potential reinforceable response occasion for one of the subjects. Where a zero appears, no reinforcement is administered. Schedules are numbered according to subjects' seating arrangement. The person who administers reinforcement checks off appropriate spaces as reinforceable responses are made. Schedules were constructed in such a way that no more than six responses would be reinforced in a row, nor more than two non-reinforced in a row.)

APPENDIX C

INSTRUCTIONS

This experiment is designed to help you get to know each other on a personal basis. A good way to do this is by sharing with each other your feelings arising from the current situation. If another group member's actions pleases or displeases you, the best way to get him to continue or to stop is to make him aware of your feelings by telling him. The more specific you can be, the more clearly your message will come across. When expressing your feelings to another person, it is best if you stick to the 'here and now.' No one can possibly change the past. One very important thing that you can give to a person is empathy and understanding. When you genuinely try to understand someone's feelings, this will naturally make him feel closer to you.

There are some things all of us do which inhibit personal communication. For example, we often make value judgements of "good" or "bad" or speculate about motives as in, "You just said that because you were angry." Finally, we often avoid involvement through information-gathering as in "How are you classified?" or "What's your major?".

These five categories (at this time the experimenter points to the cards in front of each subject) are specific statements of what I've been talking about. They are ways of interacting which have been shown to be effective in establishing and keeping close relationships. They are:

CATEGORY 1 - Any verbal expression of your current feelings resulting from interaction with the group. "I appreciate your interest" is an example that fits, while "I feel good because I just aced an exam" does not fit because it relates to something outside the group.

CATEGORY 2 - Seeking information from another group member regarding his feelings. For instance, "How did you feel when she ignored your question?". References to feelings outside the current situation such as, "Have you ever felt that way before?" do not fit this category.

CATEGORY 3 - Seeking information regarding your own behavior. A question like, "Is my insistence making you angry?" fits, while "Do people who talk a lot bother you?" doesn't because it refers to people in general and not your specific behavior.

CATEGORY 4 - Statements to another group member regarding your perception of his behavior. For example, "I think that was really a perceptive comment." An example that wouldn't fit is "He's really coming on strong," because it isn't made directly to the person being discussed.

CATEGORY 5 - Any attempt to clarify the expressed feelings of another. "Are you saying that you feel better now?" is a

good example, but "Yeah, I guess so" does not fit because it doesn't clarify a feeling.

You can see that all these categories refer to the current situation: the interaction that will take place between you in this room. Also they are about feelings, not ideas. What I am asking you to do is to interact with each other for sixty minutes using these categories.

I will monitor the group through the one-way mirror and the microphone. What you say will be recorded, but will be kept confidential. It will be used only in this experiment, then erased.

For Feedback Sessions

Whenever someone makes a statement fitting any one of these categories, I will activate the counter in front of that person. It makes a loud click which will let you know that you are in fact using these categories in your interaction. The counter registers your total and if anyone falls too far behind, the red light on his counter will be turned on. This will be a sign that either this person may need assistance, or that someone is dominating the conversation. If no one gets a click for three minutes, all lights will flash on; and they will do so every three-minute period until a click is registered. This will be a sign that the group as a whole is not using the categories and that you should change the nature of your interaction.

Finally, I realize that the apparatus makes for an artificial situation, but it's the least distracting non-disruptive way we have found to give you information concerning your interactions while those interactions are taking place.

For Partial Reinforcement Session (e.g. 66% reinforcement)

Again today the purpose of this study is to help you get to know each other on a personal basis. I am asking you to interact for a period of 60 minutes using these five categories (pointing to cards).

During this session we will again provide you with feedback about how well you are using the categories. However, today the procedure will be somewhat different. Two-thirds of the time you make a response fitting one of the categories, I will advance the counter in front of you. Let me repeat that. I will advance the counters on the average of two-thirds of the times you use a category. Do you understand exactly what I mean?

Your conversation will be interrupted less, yet we will continue to provide you with feedback on your performance.

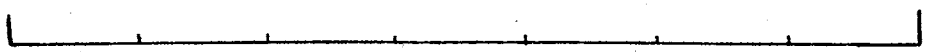
(repeat information about lights)

APPENDIX D

QUESTIONNAIRE

Rate yourself by making an X at the appropriate point on each scale.

1. **To what extent did you understand the precise meaning of the response categories?**



Completely	To a great degree	To a large degree	Moderately	Somewhat	very little	not at all

2. **To what extent did you desire or intend to use the response categories?**

Completely	To a great degree	To a large degree	Moderately	Somewhat	very little	not at all

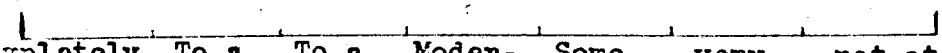
3. **How hard did you try to use the response categories?**

Completely	To a great degree	To a large degree	Moderately	Somewhat	very little	not at all

4. **To what extent did you enjoy using the response categories in interacting with the others?**

Completely	To a great degree	To a large degree	Moderately	Somewhat	very little	not at all

5. **To what extent was this session a worthwhile experience for you?**



Completely	To a great degree	To a large degree	Moderately	Somewhat	very little	not at all

Questionnaire item responses were given a numerical value in the following manner. Values of one through seven were assigned where the response "Completely" was measured as seven and "not at all" was measured as one. For example, "Moderately" received a numerical value of four.

APPENDIX E

TABLE V

INDIVIDUAL RESPONSE TOTALS

Subjects		Sessions								
		1	2	3	4	5	6	7	8	9
PRF										
	S1	14	19	29	7	12	3	4	19	26
	S2	11	16	18	17	14	4	9	24	27
	S3	7	13	18	9	11	6	1	19	16
	S4	18	10	19	7	9	7	5	13	15
CRF										
	S5	8	27	18	23	28	40	15	18	16
	S6	7	16	10	20	36	23	28	24	27
	S7	3	11	15	24	24	31	15	29	26
	S8	3	13	14	11	7	11	14	17	14

APPENDIX F

QUESTIONNAIRE RESPONSES

TABLE VI

INDIVIDUAL RESPONSES QUESTIONNAIRE

ITEM 1

Subjects		Sessions								
		1	2	3	4	5	6	7	8	9
PRF										
	S1	5	6	6	5	6	5	6	6	6
	S2	5	5	5	6	5	5	5	5	5
	S3	3	5	5	6	4	6	6	6	7
	S4	4	5	6	6	5	5	6	5	5
CRF										
	S5	5	5	6	7	7	7	7	7	7
	S6	6	4	5	6	5	5	6	5	7
	S7	5	3	4	6	6	5	5	5	5
	S8	5	5	6	5	5	7	6	6	6

TABLE VII

INDIVIDUAL RESPONSES QUESTIONNAIRE

ITEM 2

Subjects	Sessions								
	1	2	3	4	5	6	7	8	9
PRF									
S1	5	6	6	3	5	4	4	6	6
S2	5	6	4	5	5	4	3	5	6
S3	4	5	5	3	3	2	3	4	4
S4	6	6	6	6	5	5	5	5	5
CRF									
S5	3	4	5	5	4	7	3	4	3
S6	5	5	3	4	4	5	4	4	3
S7	4	5	6	6	6	5	4	5	5
S8	3	6	4	5	5	4	4	5	4

TABLE VIII

INDIVIDUAL RESPONSES QUESTIONNAIRE

ITEM 3

Subjects	Sessions								
	1	2	3	4	5	6	7	8	9
PRF									
S1	5	6	6	2	4	3	4	5	5
S2	5	5	4	5	5	4	3	5	6
S3	5	4	6	3	4	3	2	4	4
S4	6	5	5	5	4	4	4	5	5
CRF									
S5	3	4	2	2	4	6	2	4	2
S6	4	4	4	3	3	5	4	4	3
S7	3	4	6	5	5	4	2	5	4
S8	4	5	4	4	5	4	4	5	3

TABLE IX

INDIVIDUAL RESPONSES QUESTIONNAIRE

ITEM 4

Subjects		Sessions								
		1	2	3	4	5	6	7	8	9
PRF										
	S1	4	6	6	3	6	4	5	6	3
	S2	2	2	2	2	4	3	2	6	2
	S3	2	5	3	2	5	2	3	3	3
	S4	4	5	4	4	3	3	3	6	5
CRF										
	S5	2	5	2	2	4	2	2	3	1
	S6	4	3	3	5	4	6	2	3	3
	S7	4	5	6	5	6	5	2	6	4
	S8	3	3	3	3	3	5	3	2	2

TABLE X

INDIVIDUAL RESPONSES QUESTIONNAIRE

ITEM 5

Subjects		Sessions								
		1	2	3	4	5	6	7	8	9
PRF										
	S1	6	7	6	2	6	4	5	5	4
	S2	4	4	4	3	5	4	2	6	4
	S3	3	4	3	4	5	4	2	4	4
	S4	5	5	6	2	5	3	2	6	5
CRF										
	S5	4	5	5	2	6	7	2	4	1
	S6	5	4	6	4	6	6	3	5	6
	S7	4	5	6	5	6	6	2	7	4
	S8	5	4	5	5	6	6	5	5	4

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