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THE EFFECTS OF CONTINGENT MONEY WITHDRAWAL ON
THREE RESPONSE CLASSES OF VERBAL BEHAVIOR

THESIS

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By

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This study attempted to reduce three response classes in the verbal behavior of a forty-three-year-old female graduate student. Consequences were placed on interruptions, illogical statements, and total time talking. Specifically, a response rate was taken on the three response classes, and contingent money withdrawal for exceeding defined limits was used as punishment. The treatment was generally effective in reducing interruptions, illogical statements, and total time talking to one half the baseline level, but the follow-up phase suggests that some form of maintenance procedure would be needed to maintain the rate at the lower level.

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Introduction

Man communicates primarily through his verbal behavior. Although other types of communication exist, i.e. non-verbal communications such as facial expressions and physical posture, the bulk of man's interpersonal exchange is carried out through verbal behavior. And yet, until recently, very little information was gathered about the experimental manipulation of verbal behavior itself. In the past verbal behavior has been looked upon by many psychologists as an index of some other "more significant psychological process." It was looked on as an indicator of an "attitude" or "feeling" (Salzinger, 1959). More recent studies have examined the experimental variables of which verbal behavior is a function.

Verbal behavior is defined by Skinner (1957) as "behavior reinforced through the mediation of other persons." This mediation is not necessarily explicit in terms of the listener replying in words but implies the speaker is reinforced in some manner, such as speech, or some form of orienting behavior. These conditioned reinforcers can be thought of as discriminative stimuli (S^D 's) which set the

occasion for a response which then may be reinforced. "Attention" is sometimes used as a name for this type of S^D . In order to obtain reinforcement for a verbal response, it is first necessary for the speaker to obtain a person's "attention." When this is obtained, verbal responses can be emitted which then may be reinforced (Millenson, 1967).

The above approach to verbal behavior is indicative of the studies which apply a learning theory approach to verbal behavior. This approach to verbal behavior comes under the heading of "behavior modification," which is an attempt to apply a functional analysis of behavior to research areas. There are two types of learning included in the "behavior modification" paradigm, namely respondent and operant conditioning (Ullmann and Krasner, 1969). This study and others reviewed for this paper follow the operant conditioning procedure, which requires that a response be emitted and followed by a positively reinforcing consequence in order for the response to be learned. It should be further noted that studies of this nature follow a Skinnerian paradigm in that the dependent variables are the classes which together are the subject's verbal behavior and the independent variables are the generalized conditioned reinforcers or punishers intended to bring verbal behavior under the control of the experimenter (Krasner, 1958).

Is it justifiable to classify the behavior changes reported in verbal conditioning studies as operant conditioning?

This is an important theoretical question raised by Dulaney (1961) based on his partial replication of a study by Greenspoon (1951). The current interest in the modification of verbal behavior originates from this study by Greenspoon (1951). The study demonstrated that four different reinforcements, verbal approval, verbal disapproval, a light, and a tone, changed the probability of a response class of plural nouns. In Dulaney's partial replication of this study, subjects were verbally reinforced for plural nouns in the last four or five blocks of freely emitted words. Although thirty-five of forty-three subjects increased their mean frequency of plural nouns, Dulaney raises the question as to what the subjects really learned. After questioning them, he found that thirty-four subjects reported that they were reinforced for their associations of the same category; none could state the correct contingency of reinforcement, i.e., plural nouns. Thus, what the subjects had learned was to establish a set to stay in a certain category such as "jewels" or "vegetables." Dulaney (1961) says that this effect can be ascribed to the "mediation of hypothesis that cue prior verbal habits."

In his list of controls for verbal operant conditioning, Salzinger (1959) does not include verbal hypotheses, which further raises the question of considering the learning effect of subjects using a verbal hypothesis in the classification of operant conditioning. Dulaney feels that verbal

operant conditioning may eventually turn out to be human problem solving, mediated by hypothesis and transfer, but, and this is probably the most important point, the discovery of mediating mechanisms does not preclude the use of empirical operant techniques, since the free operant, the plural nouns, did come under control of the contingent reinforcer, i.e., the verbal reinforcement.

Greenspoon (1962), in addressing himself to these questions, concludes that if the operant conditioning paradigm is characterized by a shift in response probability, then verbal conditioning research may be considered within the paradigm. Although the questions raised by Dulaney are interesting, it is assumed in this study that verbal behavior is acquired by and is modifiable by the same laws of learning that control other types of behavior. More specifically, the study presumes that verbal response probabilities can be changed by the systematic introduction of reinforcers or punishers, which are contingent on a single response or class of responses.

There is ample data on which to base this approach. Several verbal studies have confirmed the finding that various response classes can be increased by the use of a reinforcement contingency, usually verbal approval (Gross, 1959; Reidy, 1958; Verplanck, 1955). Wickes (1956) demonstrated that non-verbal reinforcers such as smiling, postural shifts, and headnodding can also cause an increase.

Mandler and Kaplan (1956) used the verbal reinforcement "mm-hmm" to reinforce plural nouns and upon questioning their subjects after the experiment found that some viewed "mm-hmm" as a positive reinforcer to go on while others interpreted it as an indicator that they were saying the wrong thing. Results show that those subjects who viewed "mm-hmm" as a positive reinforcer showed an increase in plural nouns, while those who thought it was a punisher showed a decrease.

Weiss and Ullmann (1960) demonstrated that punishment in the form of withheld positive reinforcement (as defined by Whaley and Malott, 1971) would effectively decrease emotional words used in the telling of Thematic Apperception Test-like stories. Kanfer and Karas (1959) found that punishment in the form of noninteraction resulted in less learning than did reinforcement in the form of praise or criticism.

Response classes chosen for reinforcement or punishment have varied widely. Studies utilizing reinforcement and punishment have been concerned with plural nouns (Green-spoon, 1951); verbal behavior along such dimensions as feelings and attitudes (Auld and Murray, 1955) and more recently with expressions of opinion (Verplanck, 1955); attitude change (Scott, 1957); and also verbal rate (Shearn, Sprague, and Rosenzweig, 1960).

The purpose of the present study is to test the effectiveness of contingent punishment on three responses classes of the verbal behavior of a normal female individual.

Method

Subject

The subject for this study was a forty-three-year-old female graduate student. The subject was married and had three children. She divided her time between taking care of her family and her graduate-school course load. Her stated goal after graduation was a "professional" career which necessitated that she develop more effective verbal behavior. Her verbal rate was excessive at times and was illogical because of rationalizations and subject shifts. It was generally agreed by her fellow students that she was difficult to talk with because of her excessive verbal rate and that her conversation was difficult to follow because of the rationalizations and subject shifts. The subject requested the investigator's help in reaching her goal of more effective verbal behavior. This study resulted from her request.

Apparatus

The apparatus consisted of two 99N9 wrist counters which the subject wore on her wrist. The counters were used to record the occurrence of interruptions and illogical

statements. A Westclock stopwatch with a sixty-minute timer was used to record total time talking. A Panasonic Hand-held tape recorder with a built-in microphone was used to record the subject's conversations.

Only the tape recorder was used in Phase I. The wrist counters, the stopwatch, and the tape recorder were all used in the last three phases of the experiment.

Procedure

The procedure took place in four distinct phases. They were Response Class Differentiation Phase I, Baseline Phase II, Treatment Phase III, and Follow-Up Phase IV.

Response Class Differentiation Phase I.--Based on consideration of recorded conversations which involved the subject, it appeared that the presenting problem, i.e., ineffective verbal behavior, could be divided into three response classes: 1. Interruptions, 2. Illogicals, and 3. Total Time Talking. Each of the response classes were defined as follows:

1. Interruptions--Instances when the subject began to speak while others were talking.

2. Illogicals--Instances of subject shifts in the subject's conversations and instances of rationalizations antecedent to beginning a sentence. A subject shift occurred when the subject was talking about a particular topic in one sentence, such as a project upon which she

was working, and then, in the next sentence, she changed the subject and commented on someone's appearance, i.e., "My, your shirt is pretty." Rationalizations which occurred were in the form of statements antecedent to beginning a sentence, such as, "I know you probably won't believe this, but . . ."

3. Total Time Talking--A cumulative total of time the subject spent talking during each session on each day. This was only her part of any interpersonal exchange.

Salzinger (1959) describes a response class as a number of different responses which are similar to each other in the sense that the occurrence of any one may be substituted for that of any other. It can further be said that responses may belong to the same class if they are affected by the same variables (Whaley and Malott, 1971). When dealing with verbal behavior, it becomes increasingly difficult to define individual responses because of the continuous-flow nature of verbal behavior and since a great diversity in responses exists. Thus, the response class used may be an arbitrary one, functionally defined by the experimenter (Salzinger, 1959).

Such is the case with the response classes in this study. However, two important considerations have been met. Response emission is short and the organism is in a position to respond again almost immediately (Salzinger, 1959).

Data sessions for the study extended from nine o'clock in the morning until five o'clock in the afternoon. These hours were chosen since it was during these hours that the subject came into contact with people in a professional setting and it was in a professional setting that the presenting problem caused the most difficulty.

Baseline Phase II.--Data collected during this phase consisted of the number of interruptions per session per day, the number of illogical statements per session per day, and the total time talking per session per day. The subject recorded the number of interruptions on one of her wrist counters and the number of illogical statements on the other wrist counter. The total time talking was recorded on the stopwatch. The subject started the stopwatch when she began to speak and shut the stopwatch off after she had completed her statement. The investigator recorded the subject's first two days of baseline in their entirety to check the reliability of the subject's data and thereafter, made one-hour spot-checks on a random basis. The tapes of the spot-checks were played back and the investigator and a colleague recorded each occurrence of an interruption and illogical statement independently as a cross check on reliability. There was a three percent discrepancy between the investigator's findings and the findings of his colleague. The tape of the total time talking was checked against the

stopwatch to insure the reliability of that measure. These reliability checks were also utilized in Treatment Phase III and Follow-Up Phase IV. No changes were made in the subject's normal environment, except the introduction of the apparatus necessary for collection of the data since the investigator wanted an initial pre-treatment measure of each of the response classes to compare with later measures.

Treatment Phase III.--Intervention procedure used in this phase involved two basic components. (1.) The subject was instructed to pause fifteen seconds from the time someone finished speaking to her until the time she began to speak. (2.) The subject was allowed to talk for only fifteen seconds to reduce the total verbal output and to force the subject to organize her verbal behavior more effectively. The subject's fellow workers were informed of the procedure and were asked to assist in administering consequences. They were asked to record the instances when the subject did not pause the required fifteen seconds and when she exceeded the fifteen second talking time. At the end of the day, the subject's co-workers reported their data to the investigator. Consequences for violating the imposed time limits were in the form of money. The subject stated that "above all" she could not afford to lose much money, so it was decided that money loss would be an effective consequence. For each violation of the time limits, the

subject was required to forfeit twenty-five cents. The money was collected at the end of the day when the subject turned in her data on the three response measures so that consequence would immediately follow feedback (Whaley and Malott, 1971).

Follow-Up Phase IV.--The procedure for this phase of the experiment was identical to that followed in Phase II.

Results

The data in Tables I, II, and III follow a consistent pattern throughout the successive phases. Each of the response measures has a higher mean rate of occurrence in the Baseline and Follow-Up phases than occurs in the Treatment phase.

All numbers appearing in the tables have been rounded off to the nearest whole number.

TABLE I

Mean Number of Interruptions Per Eight-Hour
Data Day in Successive Phases

Phase	I	II	III	IV
Interruptions	-	5	1	2

TABLE II

Mean Number of Illogical Statements Per
Eight-Hour Data Day in Successive Phases

Phase	I	II	III	IV
Illogicals	-	6	-	3

TABLE III

Mean Number of Minutes Talking Per Eight-Hour
Data Day in Successive Phases

Phase	I	II	III	IV
Time Talking in Minutes	-	128	26	53

It should be noted that no data were taken on the response measures during Phase I. In Phase II, the data were constrained by the very low rates of occurrence of the three response measures. In Phases II and IV, the data were not constrained by the treatment procedure. In comparing the mean rates of occurrence we can see that the mean rate of occurrence for each of the measures is reduced by one-half or better from Phase II to Phase IV. This indicates that some generalization has taken place and that the treatment procedures were effective.

It should be noted that each data point in Figures 1 through 3 represents the arithmetic mean of three eight-hour data sessions. The arithmetic means of each of the three response measures in each phase, however, were calculated from the original data as collected by the investigator.

Figure 1 contains data on interruptions for the last three phases of the experiment. In Phase II, the mean number of interruptions was five per eight-hour data session. During the treatment, Phase III, the measure was constrained since the subject had to pause fifteen seconds before speaking. The mean number of interruptions in this phase is ten per eight-hour data session. In the Follow-Up Phase IV, the mean number of interruptions was two per eight-hour data session. This is less than one-half of the Baseline, Phase II rate.

Figure 2 contains data on illogical statements for the last three phases of the experiment. In Phase II, the mean number of illogicals was six per eight-hour data session. In Phase III, there were no occurrences of any illogical statements. In Phase IV, after treatment procedures were removed, the mean number of illogicals was three per eight-hour data session.

In Figure 3, the data represented is the time talking in minutes per eight-hour data session for the last three

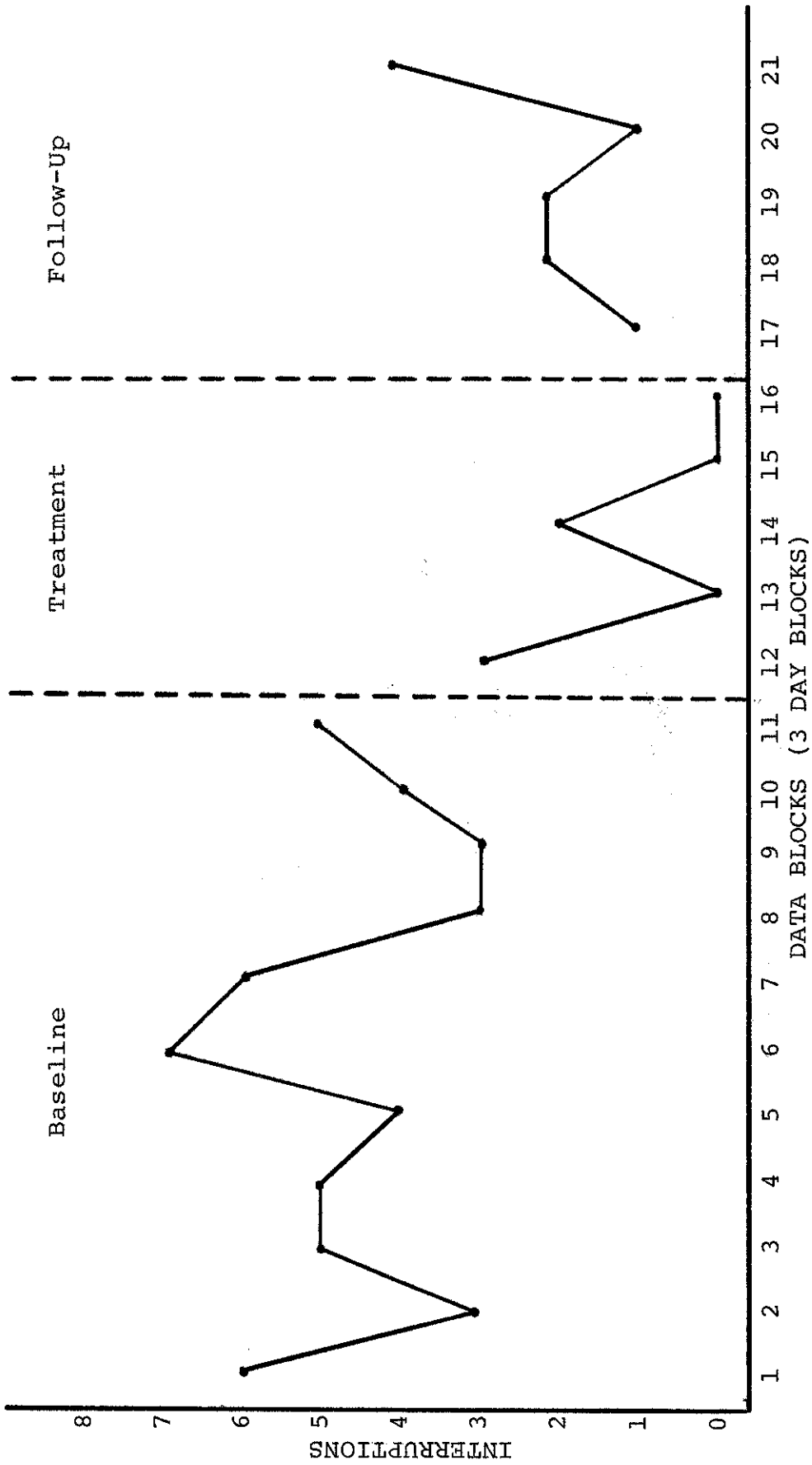


Fig. 1--Interruptions per day, Phases II, III, and IV.

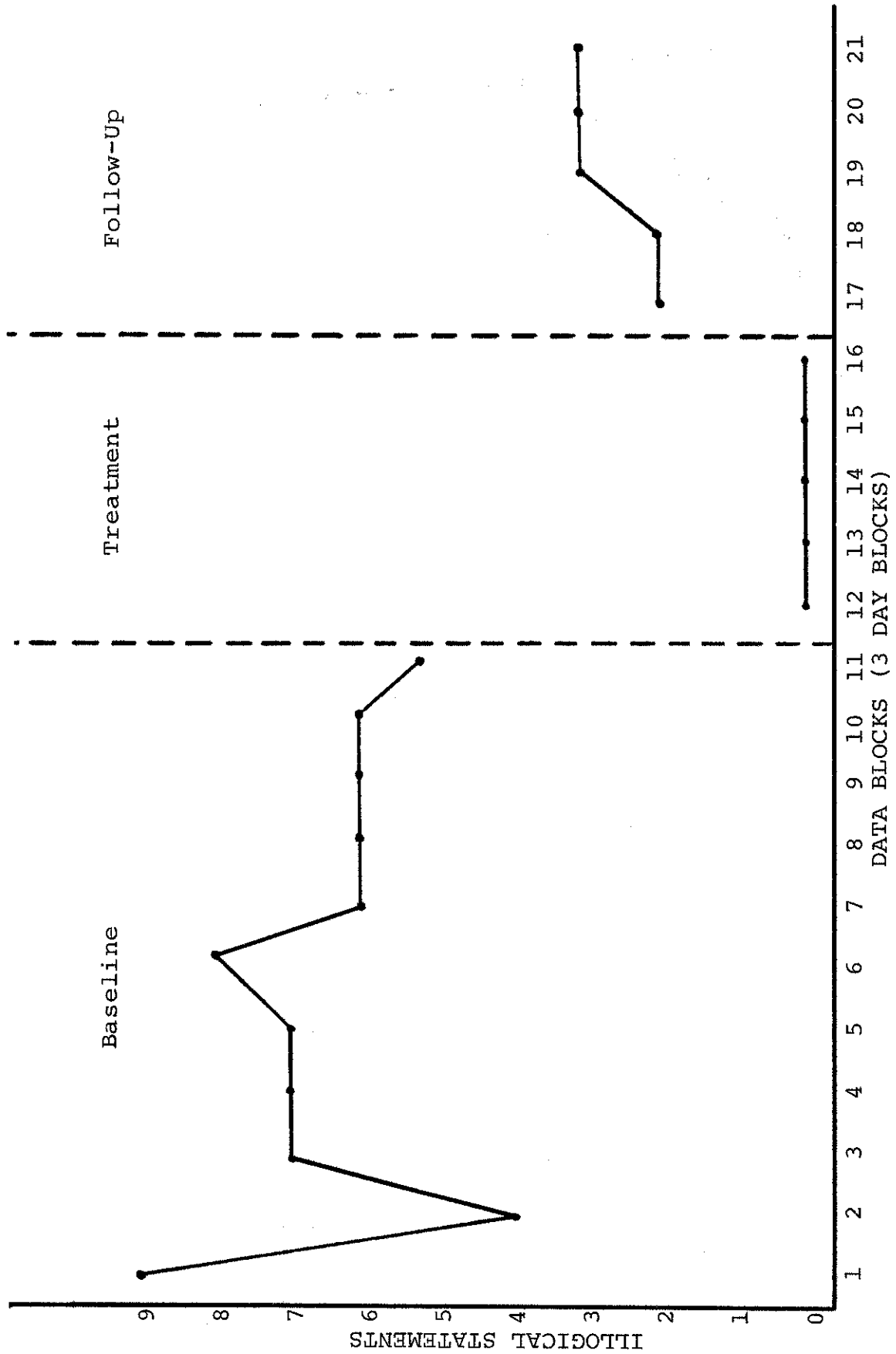


Fig. 2--Illogical statements per day, Phases II, III, and IV.

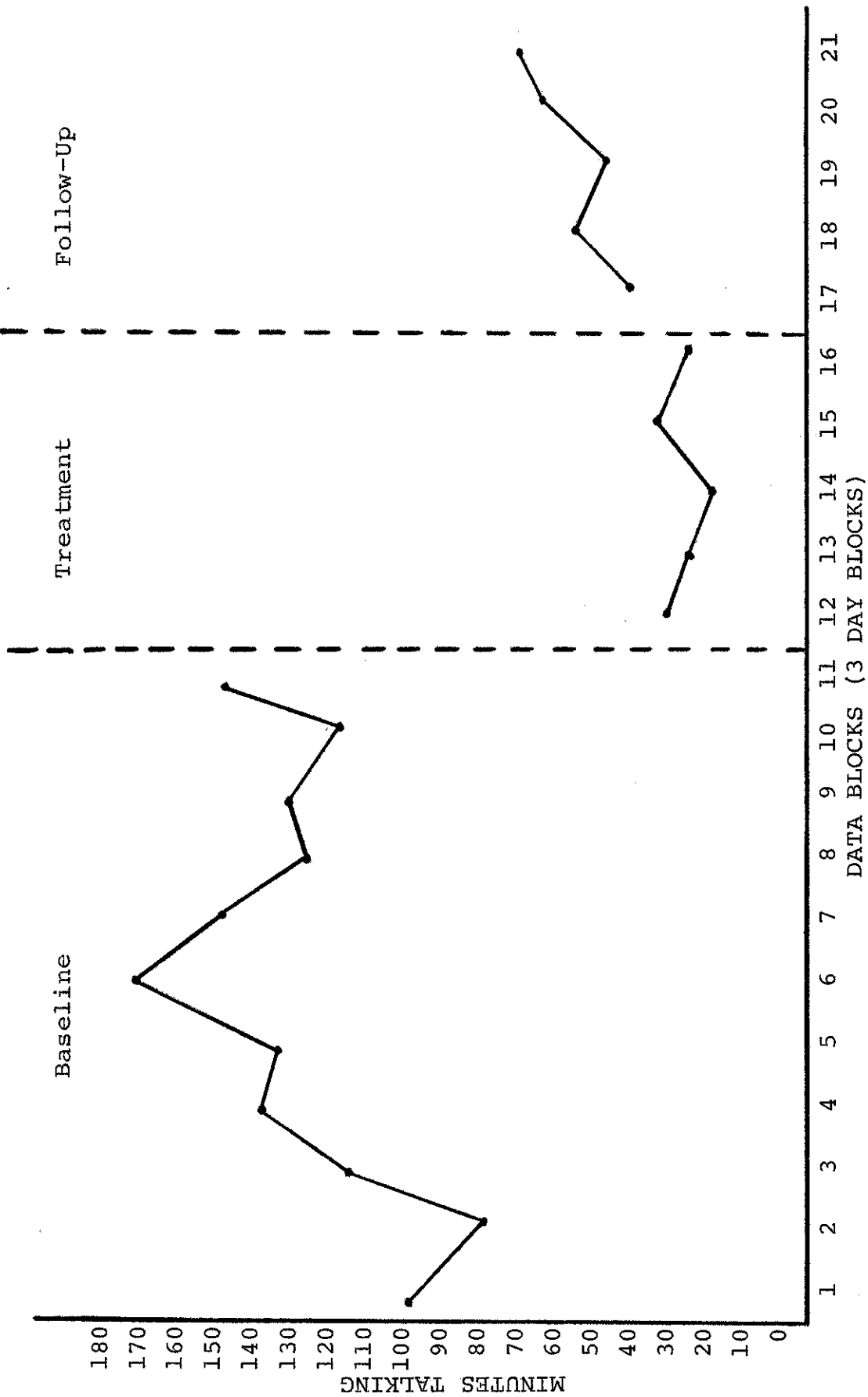


Fig. 3--Time talking per day, Phases II, III, and IV

phases of the experiment. In Phase II, the mean number was 128. The mean in Phase III fell to twenty-six minutes. This, again, can be attributed to the treatment procedure. In Phase IV, the mean rose to fifty-three minutes per eight-hour data session. This is twice the mean Phase III, but only forty-one percent of the mean rate of occurrence in Phase II. As described in the procedure section, the subject was consequted by a contingent loss of money if she exceeded certain limits during Treatment Phase III. The total amount of money lost was nineteen dollars and seventy-five cents.

Discussion

In any experiment dealing with behavior which has a long history of reinforcement such as verbal behavior, there needs to be some means established to interrupt the behavior or to eliminate the reinforcers which maintain the undesired behavior. Because of the difficulty involved in removing the reinforcers for the undesirable behavior of an excessive verbal rate (indeed it may even be difficult to identify these reinforcers), it was decided that interruption of the behavior by introduction of some constraining variables and contingent punishment was likely to be the most efficient method for reducing verbal rate.

The results of this particular experimental design are typical of designs in which a constraining variable and

contingent punishment are applied to reduce the occurrence of the undesirable behavior. If a maintenance procedure is not set up to monitor the subject's behavior, the treatment procedure will frequently be followed by recurrence of the undesirable behavior (Whaley and Malott, 1971). This is particularly true since the presence of the apparatus in the design easily becomes a discriminative stimulus indicating the onset of a punishing or non-reinforcing stimulus (S^{Δ} 's), contingent on excessive verbal rate. The absence of the apparatus is a discriminative stimulus indicating the absence of punishing stimuli or what may be thought of as the stimuli associated with positive reinforcement (S^D 's) for excessive talking behavior. It would be difficult to identify the positive reinforcers completely, but social reinforcement or "attention" is usually a very powerful reinforcer for the human species. A study by W. Verplanck used social reinforcement from a listener in the form of agreement and favorable paraphrasing of the speaker's ideas to strengthen certain conversational behavior such as opinion statements and information statements (Verplanck, 1955). The fact that the subject receives the social reinforcement or attention from her listeners when talking in the absence of the apparatus sufficiently explains the results of this study. The concept of S^D and S^{Δ} are explained fully by Whaley and Malott (1971).

After further consideration of the results of this experiment, it is apparent that a monitoring device would be beneficial in keeping the subject's verbal rate at its reduced level. One device which could be utilized is a fixed-interval "bleeper." This apparatus is about the size of a cigarette pack and has a "bleeper" which is adjustable to varying intervals. The procedure which the subject would follow would be fairly simple. The subject would carry the "bleeper" in a pocket or purse and adjust the "bleeper" to go off at a short interval. When the "bleeper" sounded, the subject would record on a wrist counter the number of times during the 9:00 a.m. to 5:00 p.m. data session that the "bleeper" went off and the number of times she was talking when it sounded. This would allow a percentage to be calculated. Monetary or other effective consequences would be enforced contingent upon the percentage of time the subject was talking when the "bleeper" sounded. A limit would be established and when exceeded, the consequences would be applied. When the subject had not exceeded the limit for a pre-specified number of days at the first interval, the "bleeper" interval would be extended until it is faded out entirely. If the fading process is slow enough, the procedure should result in the lower rate of verbal behavior being maintained.

The lower rate of all three of the response measures in Phase II indicates that some generalization has occurred.

Studies of this nature are subject to some criticism since it can be said that without further constraining procedures, the subject's behavior will probably return to pre-treatment levels. This is probably the case in studies where the subject has not requested help or does not see his behavior as a problem. When a subject does perceive his behavior as a problem and asks help in correcting it, the probabilities of this return to pre-treatment rate are less likely, especially if the subject is positively reinforced by his community for maintaining his new mode of behavior (Verplanck, 1955). Thus, it is imperative that further studies in this area do not neglect the importance of the effects of the behavior of the subject's verbal community. The community can control the most effective consequences when dealing with verbal behavior problems, that is, the social reinforcers available to the subject.

Studies on verbal conditioning which appear in the literature have demonstrated that verbal behavior is indeed conditionable using operant conditioning techniques. It follows that the avenues available for further experimentation are varied. Psychotherapy is a unique interpersonal relationship in which verbal behavior plays a very important role. It may be that psychotherapy is a complex conditioning process in which the patient learns to talk differently and little else (Winder, 1957).

Verbal conditioning can be helpful in studying normal populations in terms of the development of interpersonal relationships, attitude development, and placement of individual and group values. Relatively few studies on verbal behavior of normal populations are found in the literature. Perhaps this is because there is a great deal of emphasis placed on other types of populations whose problems are more pressing. Considering the importance of verbal behavior to effective communication, it is an area of study which deserves more attention.

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