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A Program for Teaching Self-Care Techniques to Severely Retarded Residents of an Institution for the Retarded

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A PROGRAM FOR TEACHING SELF-CARE TECHNIQUES TO SEVERELY RETARDED RESIDENTS OF AN INSTITUTION FOR THE RETARDED

by

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INTRODUCTION

The institutionalized retardate was, until very recent years, a person who was to be fed and cared for and little else. Trying to teach a severely retarded child to do anything was thought to be impractical, if not impossible. The whole outlook on the retarded was simply to diagnose and care for the person.

The traditional forms of therapy and training were, at best, minimally effective in dealing with the severely retarded. This was due, in part, to the inability of the retardate to verbalize his feelings or desires.

Skinner (1953) suggested applying the principles of operant conditioning to human behavior. As this approach became accepted, reports appeared pertaining to the effectiveness of these principles in changing deviant forms of behavior. The mental hospital became the laboratory for such work because of the extreme forms of behavior to be found there. The assumption was proposed that if such principles could help the psychotic, then those persons classified as normal could also benefit.

Two of the initial attempts at applying the principles of operant conditioning to institutionalized persons were by Ayllon and Azrin (1968) and by Girardeau and Spradlin (1964).

Ayllon and Azrin describe their work at the Anna State Hospital in Illinois as an effort ". . . to design a motivating environment

based on reinforcement theory, specifically operant reinforcement theory." Their work, started in the Fall of 1961, was with mental patients, ". . . those who were most resistant to the currently used procedures," and is continuing. The intention of the program over the past seven years has been to replace "symptomatic" behavior with constructive, socially accepted behavior.

Girardeau and Spradlin, working at the Parsons State Hospital and Training Center in Kansas, applied these same principles to moderately and severely retarded residents. Their original work was to establish and maintain appropriate behaviors in areas of self-care, social interaction, and general management of personal and group property.

Atthowe and Krasner (1967), similarly, have applied operant conditioning to schizophrenic and brain damaged patients of the Veterans Administration Hospital in Palo Alto, California. Their attempts were, as in the two previously mentioned projects, "to create and maintain a systematic ward program within the ongoing social system of the hospital," to change the patients' inappropriate behaviors to behavior which was acceptable in the areas of self-care and decision making.

One aspect of these three programs which applies to the present study is the use of tokens or generalized reinforcement. Skinner (1953) in speaking of generalized reinforcers states that through the pairing of a neutral stimulus with a variety of primary reinforcers the rewarding properties of the primary reinforcers are transferred to the

neutral stimulus making it a generalized reinforcer. The primary reinforcer is generally effective because it reduces a specific state of deprivation. However, the generalized reinforcers act independently of these deprivation states making them much more valuable in reinforcing sequences of behavior without interruption.

Watson (1967) further suggests that, in addition to the fact that the generalized reinforcer (token) is independent of specific deprivation states, it also has a possible summation effect occurring by virtue of the numerous associations with different primary reinforcers, ultimately making it the most powerful type of reinforcement available. Girardeau (1962), though not disagreeing with the basic idea, performed a study comparing behaviors reinforced by primary reinforcers to behaviors reinforced by generalized reinforcers, but was unable to statistically substantiate this summation effect hypothesis. However, there are several important reasons why generalized reinforcers are used. First, tokens are convenient. They can be given during a task and do not cause an interruption by the resident's consuming his reinforcement. They are also hard to destroy.

Secondly, the token is not specific to a certain deprivation state, which means that satiation does not become a deterrent to the rate of behavior.

Finally, because the token is exchangeable for a number of primary reinforcers, it is not necessary for the experimenter (E) to reinforce each resident with a different primary reinforcer at the time of reinforcement presentation.

Token reinforcement is becoming a popular means of rewarding behavior. Its application in institutions for either mental patients or retardates, however, seems to be the most prominent form of group modification. In addition to those programs already mentioned, token reinforcement is being used to eliminate hyperactive behavior; (Birnbrauer and Lawler, 1964); to eliminate destructive behavior, (Edwards and Lilly, 1966); and to set up entire programs of training in verbal ability, manners, work skills, and self-care activities, (Bensberg, et al, 1964; Gorton and Hollis, 1965; Hamilton and Allen, 1967; Karen and Maxwell, 1967). These programs (token economies) encompass the entire day's activities and require the use of tokens in place of money as the medium of exchange.

It is in relationship to this type of all-day token economies that the current study was being initiated. The two separate self-care techniques which were taught, (hand and face washing and teeth-brushing) are not new ideas in training the retarded. However, it was hoped that the way these techniques were taught and the manner in which the skills were incorporated into an already partially established token economy would be of value to the field of retardation.

METHOD

Subjects

The subjects were 36 females classified as either severely or profoundly retarded, ranging from 12 to 22 years of age. All the subjects were maintained on the same ward at the Fort Custer State Home in Augusta, Michigan. This ward of women was chosen because of the lack of self-care skills shown by the T.M.R. rating scale used to evaluate the social, self-care and other activities of the residents of the home. None of the residents worked at any kind of job off the ward.

Apparatus

There was no technical equipment used in this project. However, many common ward items were employed. These items were tokens (plastic checkers), tooth brushes, tooth paste, washcloths, towels, soap (liquid and bar), a laundry hamper, and a portable store stocked with consumable goods as described in the Procedures section of this paper.

Procedure

Establishment of tokens as generalized reinforcers.

The methods of establishing the value of tokens as generalized reinforcers was similar to those used in the studies of Girardeau and

Spradlin (1964), Birnbrauer and Lawler (1964), Atthowe and Krasner (1967), and Sidman (1965).[1] This token system had been established prior to a ward industry project set up by the E a year before the current study (Nelson and Whaley, 1967).

Initially, the E and several other psychology graduate students observed the residents of the ward for five days prior to the introduction of the tokens. After several discussions with the nursing and attendant staff as to the purposes and advantages possible using a token reinforcement system, the attendants agreed to enthusiastically support the project and to assist whenever possible. When all observations were completed and evaluations made, the introduction of tokens began.

Three psychology students assisted the E for this stage of the project, working in teams of two. Initially, the residents were presented tokens by the first E for sitting quietly. The token was exchanged immediately for an M&M by the second E of a team. As the session progressed, the time interval between the presentation of the token and that of the M&M was increased to two minutes. At the end of Session One, 28 of the original 31 residents on the ward at that time were holding the tokens for the full two-minute interval.

At the end of ten sessions (one week) all the residents were holding the tokens up to thirty minutes before exchange was started.

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[1]The E wishes to thank Dr. Murray Sidman for granting permission to cite his unpublished manuscript, "The Lavers Hall Project" in this study.

In the subsequent weeks the tokens were also dispensed for working on the ward industry project. A portable store was introduced where the residents could exchange the tokens they had earned for sitting quietly or for working for consumables. At this point in the project the consumables were candy bars and M&M's. The residents were called to the store one at a time and were given one M&M for each token or one Junior size candy bar for each five tokens. If a resident was caught stealing tokens from another resident, the tokens were taken away and it was impossible for goods to be bought at the store.

The store had been functioning on weekdays since its introduction. It was brought onto the ward in the middle of the afternoon after the residents had had the opportunity to save a number of tokens.

At the time of the current project, the store was stocked with such goods as candy bars, M&M's, bracelets, headbands, combs, talcum powder, cologne, and several other personal type items. A girl could receive nothing but candy unless she participated in programs other than sitting quietly.

Shaping of Teeth Brushing and Hand and Face Washing.

The method of training used is a form of shaping. The behavior task to be taught was broken down into many parts of responses. When the resident successfully approximated one of these parts she was immediately reinforced. It was necessary that as she more closely approximated the terminal behavior of each response, she was not reinforced for a more fundamental, early response, but for the more

accurate approximation of the terminal behavior. As each response was learned it was linked to the other already learned responses, forming a chain of responses. As this chain formed, the ratio of reinforcement was increased so that larger and more complex units of the desired response were necessary for the resident to obtain the reinforcement. When the resident had learned all the responses and linked them together, the desired behavior had been learned. Thus, shaping was used to teach each individual response, and "forward" chaining was used to bring the responses together to form the behavior skill.

Definitions of Desired Behaviors.

A. Hand and Face Washing - This task consisted of two seperate behavior skills. The first was that of washing with a washcloth. The other was the using of soap and running water without a washcloth.

Washing with a washcloth was broken down into eight distinct steps. Prior to the resident's entrance into the bathroom the E had acquired one washcloth for each resident, placed them in the basin, wet them with warm water, added liquid soap, and provided at least six towels for drying.

The actual task began when the resident (1) entered the bathroom after being called by name. She (2) went to the basin, (3) picked up a washcloth (4) washed her hands, forehead, cheeks, around her mouth, neck and side of her face for at least 15 seconds, (5) put the cloth in the laundry hamper, (6) dried her face and hands, (7) draped the towel on the railing and (8) left the bathroom area immediately after receiving a token.

When washing with running water and soap the E made available a bar of soap at each sink, at least six towels on the railing by the door, and did not have more residents in the bathroom than there were sinks available for washing.

The resident (1) entered the bathroom when called by name, (2) wet her hands under the running water, (3) picked up the soap, (4) lathered the entire arm, hand and face surfaces, (5) rinsed off the soap, (6) dried all washed areas with a towel, (7) draped the towel on the railing, and (8) left the bathroom as soon as she received a token.

B. Teeth Brushing - this task was quite difficult to evaluate because of the tendency of the E to classify mere motion as the correct response.

The E in preparing for this task made sure that all brushes had tooth paste on them.

The task had six seperate response steps. The resident (1) entered the bathroom after being called by name, (2) took her brush from the cabinet (her brush was indicated to her if necessary), and (3) started brushing. The brushing was to cover all surfaces of the teeth, front and back, and was done in accordance to the recommendations of the Dental Clinic for the care of residents' teeth. All staff personnel were briefed by one of the dentists before working on this project. After the brushing was finished (4) the brush was completely rinsed out and (5) replaced in the cabinet. Many residents

rinsed out their mouths -- this was encouraged but was not required. The resident (6) left the bathroom area immediately after receiving a token.

Phase I: Baseline:

A baseline rate was established for each of the two different behaviors. This was done by two E's setting up the facilities and then calling the residents individually into the bathroom. Each resident was told to brush her teeth and a check list of the six steps involved was kept. The residents were accustomed to having the attendants do the brushing and did not all respond to the verbal command. When the residents had all had an opportunity to brush their teeth the same baseline procedure was followed for the hand and face washing with an eight-step check list for each of the two seperate tasks. One week (ten sessions, five of each type) of hand and face washing and one week (five sessions) of teeth brushing were run. The average percentage of the total correct responses was designated as the baseline rate.

Phase II: Self-care Procedures:

During the several weeks of shaping, one token was given for each correct response step or part thereof. There were two E's present at each session during this early shaping; one shaped and gave out tokens, the other recorded data.

As an extra check during this early shaping period, another E ran the project for a period of about one week. The purpose of this was to

get an indication of the objectivity of the response step measures. This other E was given an opportunity to watch the program only during the baseline procedure and then read the definitions of desired behaviors presented in this paper.

When the basic shaping was completed, the schedule of reinforcement (token presentation) was weakened to an eventual requirement of successful completion of the entire task before a token was presented. At this later stage, two E's were still necessary, but their roles were changed to one E taking the data, the other giving out tokens at the door of the bathroom as the residents left.

The residents were allowed to exchange their tokens as before by going to the store when it was brought on the ward during mid-afternoon. Only candy was available to those who did not correctly perform the required tasks. All tokens were exchanged before the end of the work day (residents' dinner hour).

During the latter part of the program, an epidemic of shigella caused the closing down of all programs on the ward. However, after two weeks' time the ward was again opened and the programs resumed.

RESULTS

The baseline rate was determined in both tasks by dividing the total number of response steps completed by the number of steps possible. In the hand and facewashing, which had eight possible steps, the total possible responses in a session with 36 residents participating would be 288.

During Session One of the hand and facewashing project, a baseline rate of 72% was produced (207 correct responses out of a possible 288). The ten baseline sessions varied in rates from 71$ to 76% with a mean rate of 74% (Figure 1). Session Eleven showed a jump in rate to 89% and the rate never dropped below 85% for the remaining 65 sessions. The criterion response level of 100% was reached for the first time during Session Seventy-two. The total program covered a period of 55 working days or eleven weeks. The percentages have been plotted in Figure 1.

The percentage of residents completing all eight responses was also computed. During the baseline period the percentages ranged from 69% to 72% (25 to 27 residents). During the training period the percentage of residents completing all eight responses never fell below 74% (28 residents). This is shown in Figure 2.

A third percentage was determined, the average percentage of individual responses steps completed per week. The eight responses

of the two hand and face washing tasks were considered. It was shown that the actual washing responses along with the draping of the towel on the railing were the most difficult to shape. The data for the weekly percentages of the two hand and face washing tasks are given in Figures 3 and 4.

The teeth brushing project was started on the same day as the hand and face washing project. Baseline rates were taken during the first week (five sessions). The baseline rates varied from 74% to 75%, the mean being 74.4%. Over the next 75 sessions (11 weeks), the rates ranged from 82% to the criterion of 100%, which was first reached on the 54th session. The rates were computed in the same manner as in the hand and face washing project with the maximum possible responses totaling 216. The rates are presented in Figure 5.

The percentage of residents completing all six responses of the teeth brushing project was also calculated. During the baseline period this percentage varied from 39% to 40% (14 to 15 residents). The sharpest increase came during the second week of shaping. This information is given in Figure 6.

The actual brushing response was by far the most difficult of the teeth brushing response steps to shape. Starting at only 42.9%, this response increased to 100% by the 12th week and maintained that rate during the last two and one-half weeks of data collection. Figure 7 shows the weekly rates of the teeth brushing project.

DISCUSSION

Although immediate rate increases from baseline to training sessions (Figures 1 and 4) are slight, subsequent training sessions produced much more dramatic increases. This is partially due to the fact that most of the residents who did not have any of the response skills prior to the project had had the tasks performed for them by the attendant staff. As the skills were shaped, the rates increased much more rapidly.

The percentage of the residents completing the required tasks rose very steadily even though the initial rates were fairly high (Figures 2 and 5). This would seem confusing except for the fact that if a resident did not perform any of the skills, she was considered a minus on the check list. The resident who may have performed all but one of the required responses also received a minus on the list.

The average percentage of individual response steps, given in Figures 3, 6, and 7, shows that certain of the response steps were much more difficult to teach than others (the actual brushing step in the Teeth Brushing project).

Because the rates of the two hand and face washing tasks were almost identical, they were averaged together in both the group percentages of correct responses and the percentage of the group completing the tasks (Figures 1 and 2).

The point of prime importance in this study is that token (generalized) reinforcement is an effective means of training the severely retarded in self-care skills. The reasons for using the tokens have been given in the Introduction section and should be reiterated. First, the tokens were much more convenient than primary reinforcers. The token was given at the end of a response step or the completed behavior task. No interruption was caused by the taking of time for a resident to consume an M&M or a Froot Loop. In addition to this, the loss or destruction of tokens was held to a minimum. Only thirteen tokens were unaccounted for at the end of the twelve weeks of the project.

Secondly, a resident who was brushing her teeth or washing her hands did not show a decrease in rate because she was not hungry. The resident could hold her tokens until the middle of the afternoon when she was hungry and the token could then be more valuable.

The third benefit of token reinforcement was that the token itself was universally reinforcing on the ward. Because one resident may have preferred Froot Loops while another preferred M&M's or candy bars, the reinforcement procedures were not complicated for the E. Whatever the resident preferred was available at the store where individual selection of consumables was encouraged.

The shaping of these two self-care techniques -- Hand and Face Washing and Teeth Brushing -- has proved very beneficial to the attendants on the ward. When before up to three attendants and 45 minutes was necessary, three or more times a day, to take care of

these two self-care tasks, it now takes only one attendant and less than 30 minutes to accomplish these things.

The Dental Clinic also reported that there was no noticeable increase in the occurrance of tooth decay among the residents of the project ward. This might tend to indicate that the residents did at least as well in the brushing of their own teeth as the attendants had done on the residents' teeth.

One aspect of the project that was not taken into consideration in the planning of this project was the transferring of residents from other wards to the project. Each time this occurred there was a temporary drop in the percentage of responses completed. Because of the necessity of teaching these skills to the residents, those new transfer residents were included in the project.

The ward quarantine, mentioned in the Procedures section, caused very little change in the data from the hand and face washing or the teeth brushing. Virtually all percentages remained at the criterion level of 100% (Figures 1, 2, 5, and 6).

Although the shaping was done in a uniform way from day to day it was necessary for those residents who did not respond correctly to have their teeth brushed and their hands and faces washed for them by the E because of the required maintenance of a minimum hygiene within the institution. Because of this fact some attention was given to those residents during the brushing and washing. This was not, however, done with any verbalization and it is felt that this social reinforcement was kept down during the shaping sessions. Only at the time that a token was given out did the E say anything.

In evaluating the effect of the second E in running the program, the rates seemed to have risen at a steady pace and only in the percentage of the group completing the teeth brushing task (Figure 6) was there an abrupt rise in the rates not seen when the first E was in charge.

Because of specific hygiene levels necessary, the E gave up some control in favor of satisfactory completion of the tasks involved. The levels of oral hygiene and general cleanliness never fell below institutional requirements. Had these hygiene requirements been ignored, the project would, undoubtedly, have been dropped due to administration or nursing pressures.

The usability of token reinforcement with individual retardates has been documented many times; but when dealing with a large, untrained group of severely retarded individuals, data have not always been readily available.

The use of primary reinforcers has been more common. The fact that primary reinforcement may involved many different types of reinforcement supports the use of tokens in the training of large groups of retarded individuals.

In addition to this possible time saver in training, the number of personnel required to continue the self-care programs has been greatly reduced. The attendant staff has been maintaining the project with tokens even though the E has not always been available to help with the work. This is a possible indication that some of the operant techniques used have made an impression on the attendant staff and they

recognize there are advantages to using these techniques. If the attendant staff continues to use the techniques developed in this project, the work put into this project can be considered successful.

FIGURE CAPTIONS

Figure 1 The group percentage of correct responses completed in the hand and face washing task.

Figure 2 The percentage of residents completing the hand and face washing task.

Figure 3 The average weekly percentage of individual response steps completed in hand and face washing using running water and soap.

Figure 4 The average weekly percentage of individual response steps completed in hand and face washing using washcloths.

Figure 5 The group percentage of correct responses completed in the teeth brushing task.

Figure 6 The percentage of residents completing the teeth brushing.

Figure 7 The average weekly percentage of individual response steps completed in teeth brushing.

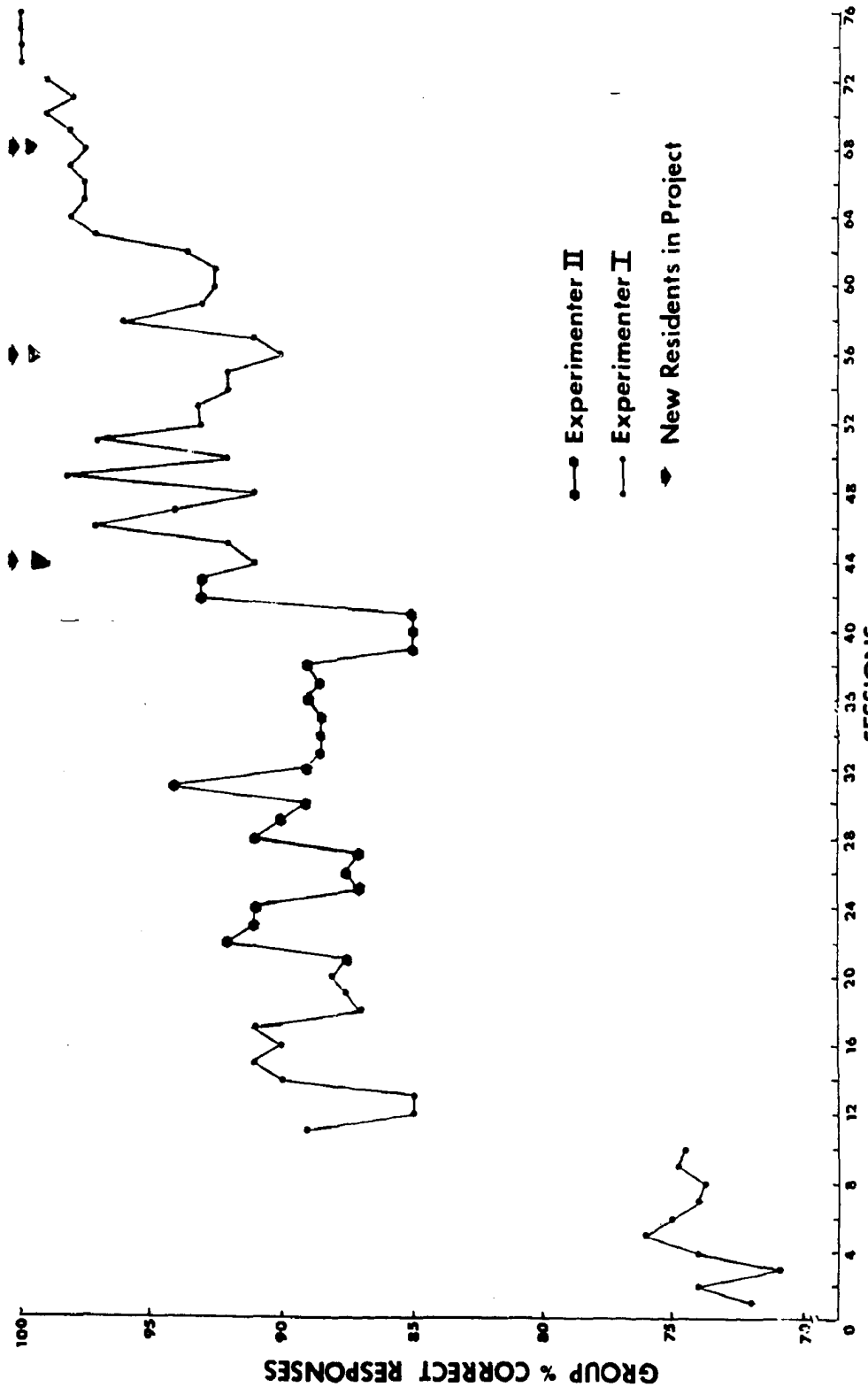

Figure 1

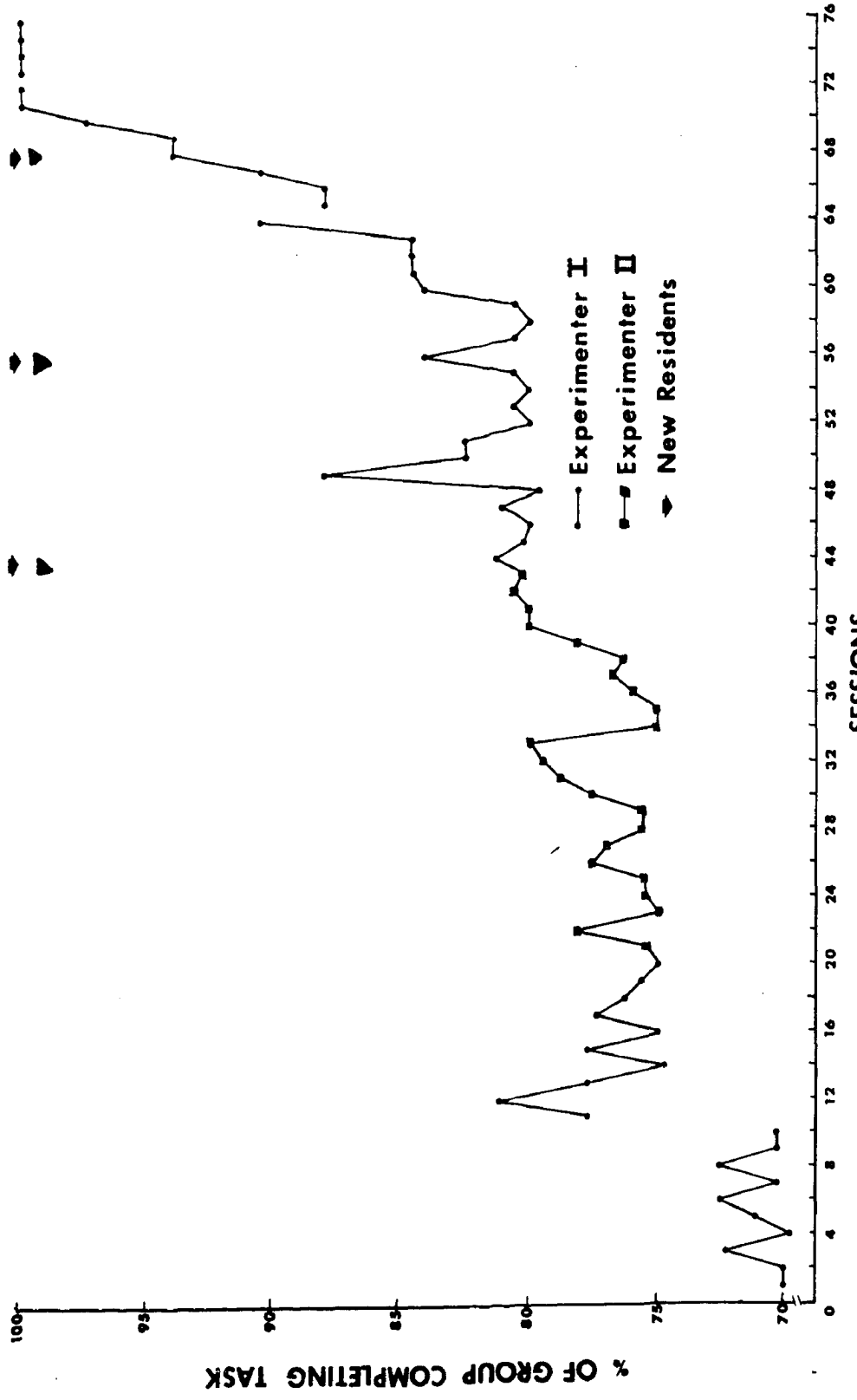

Figure 2

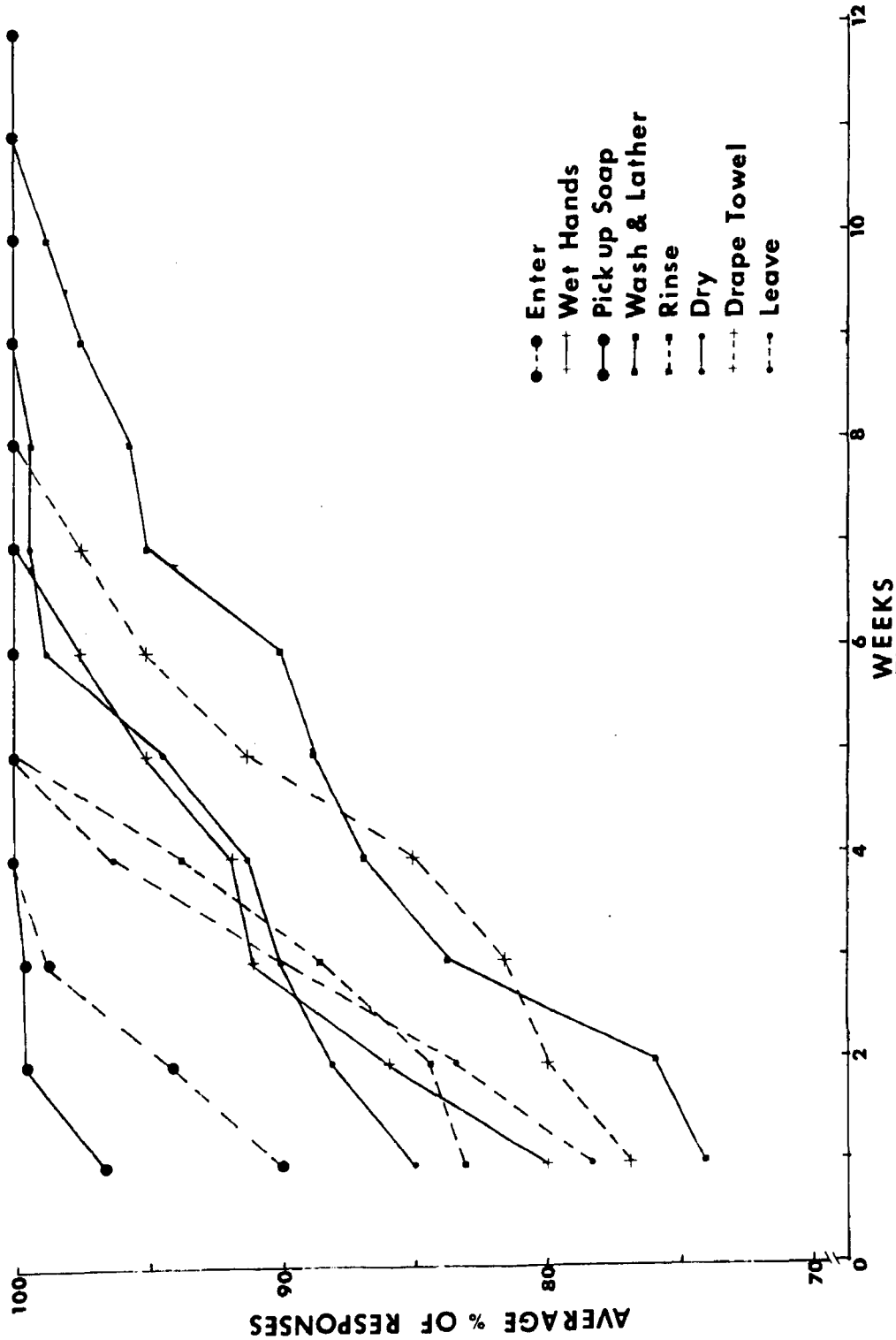

Figure 3

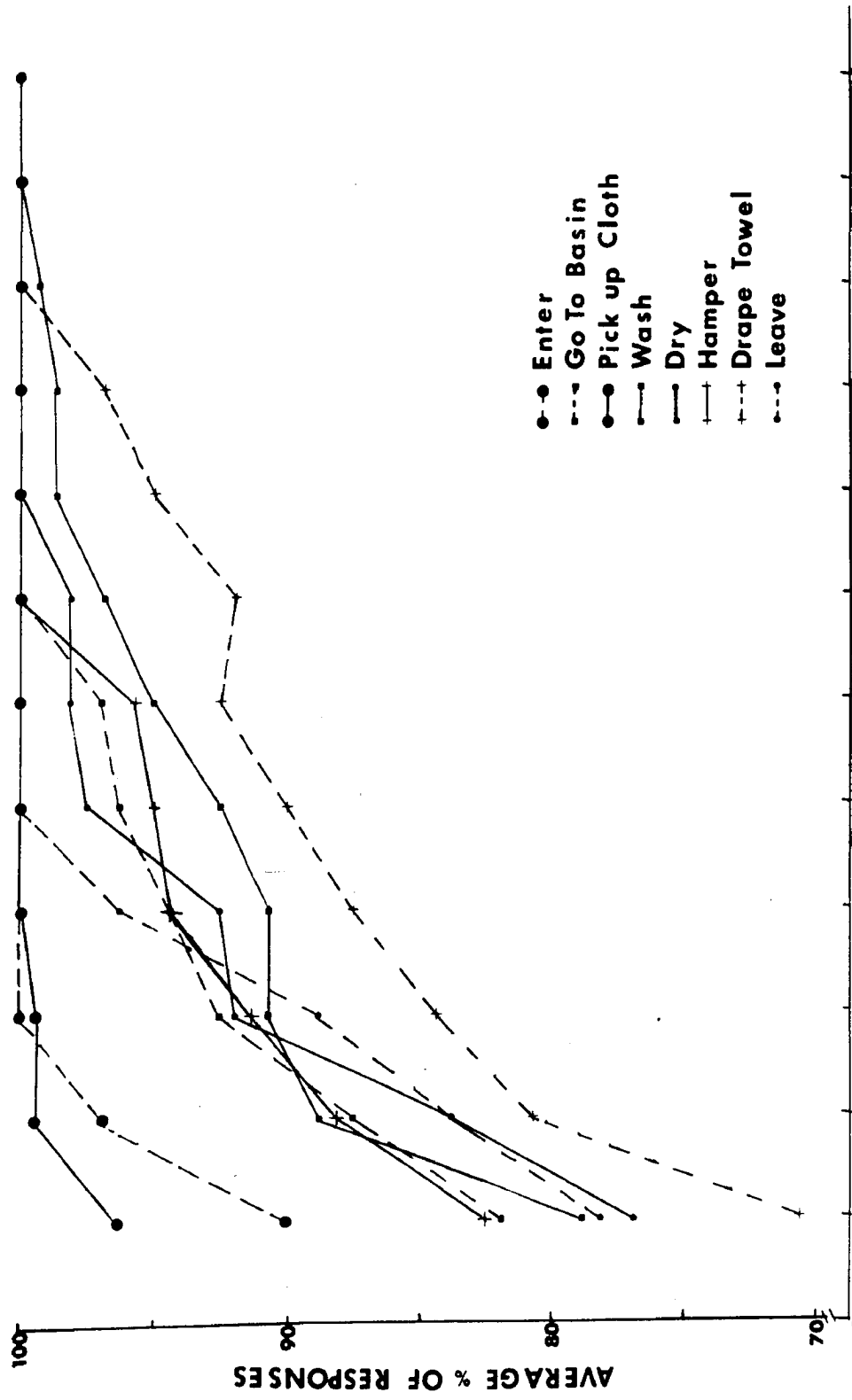

Figure 4

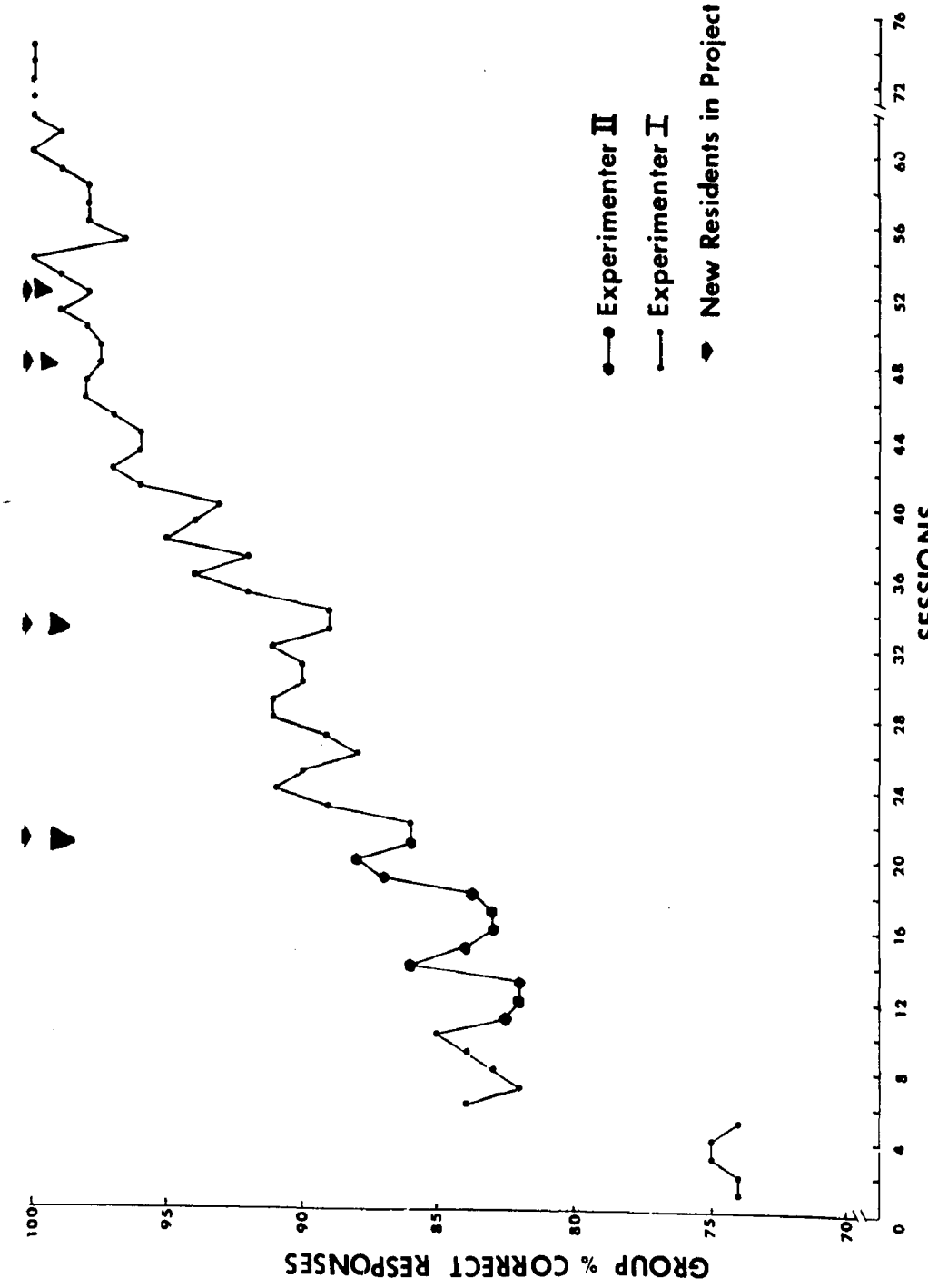

Figure 5

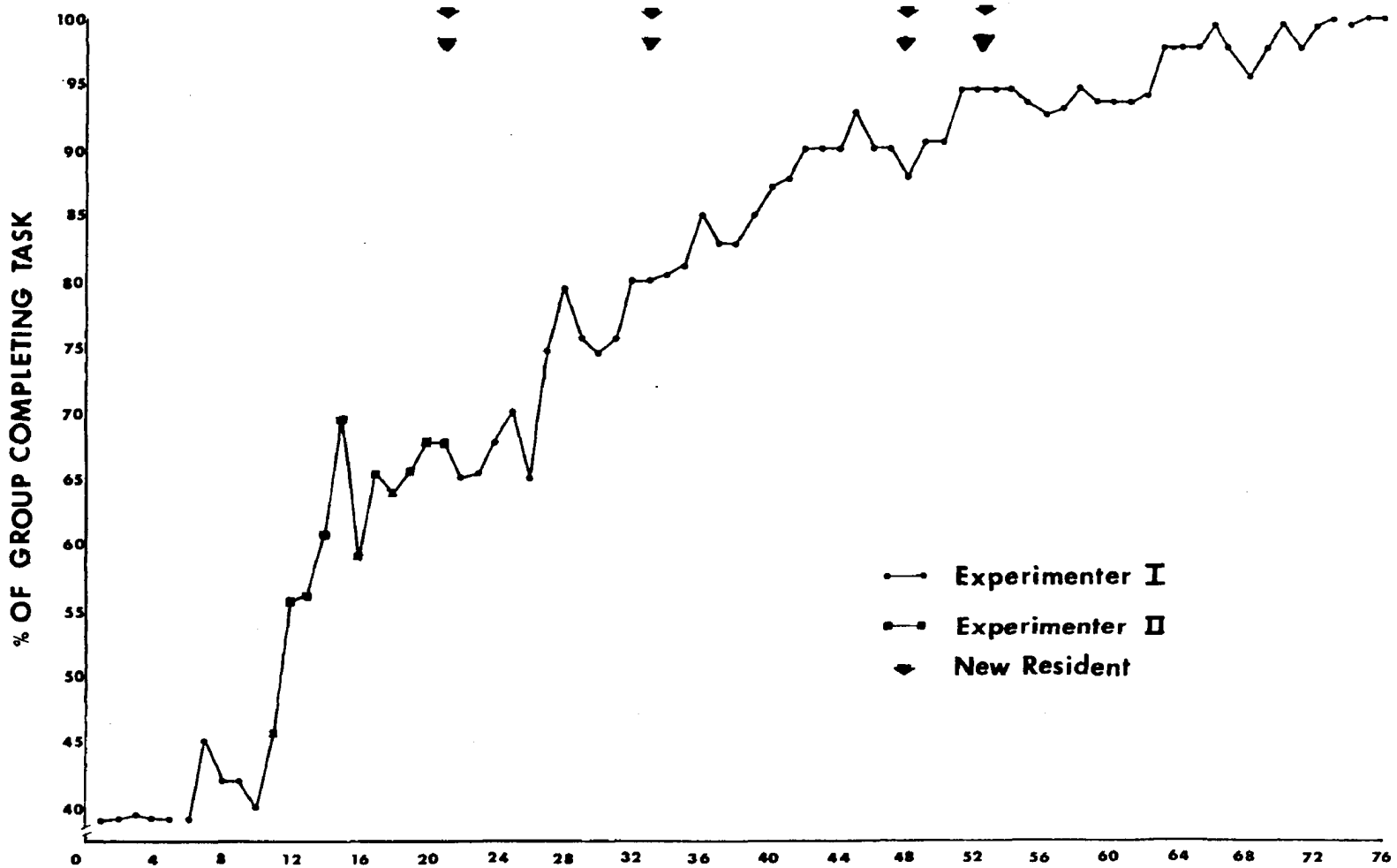

Figure 6

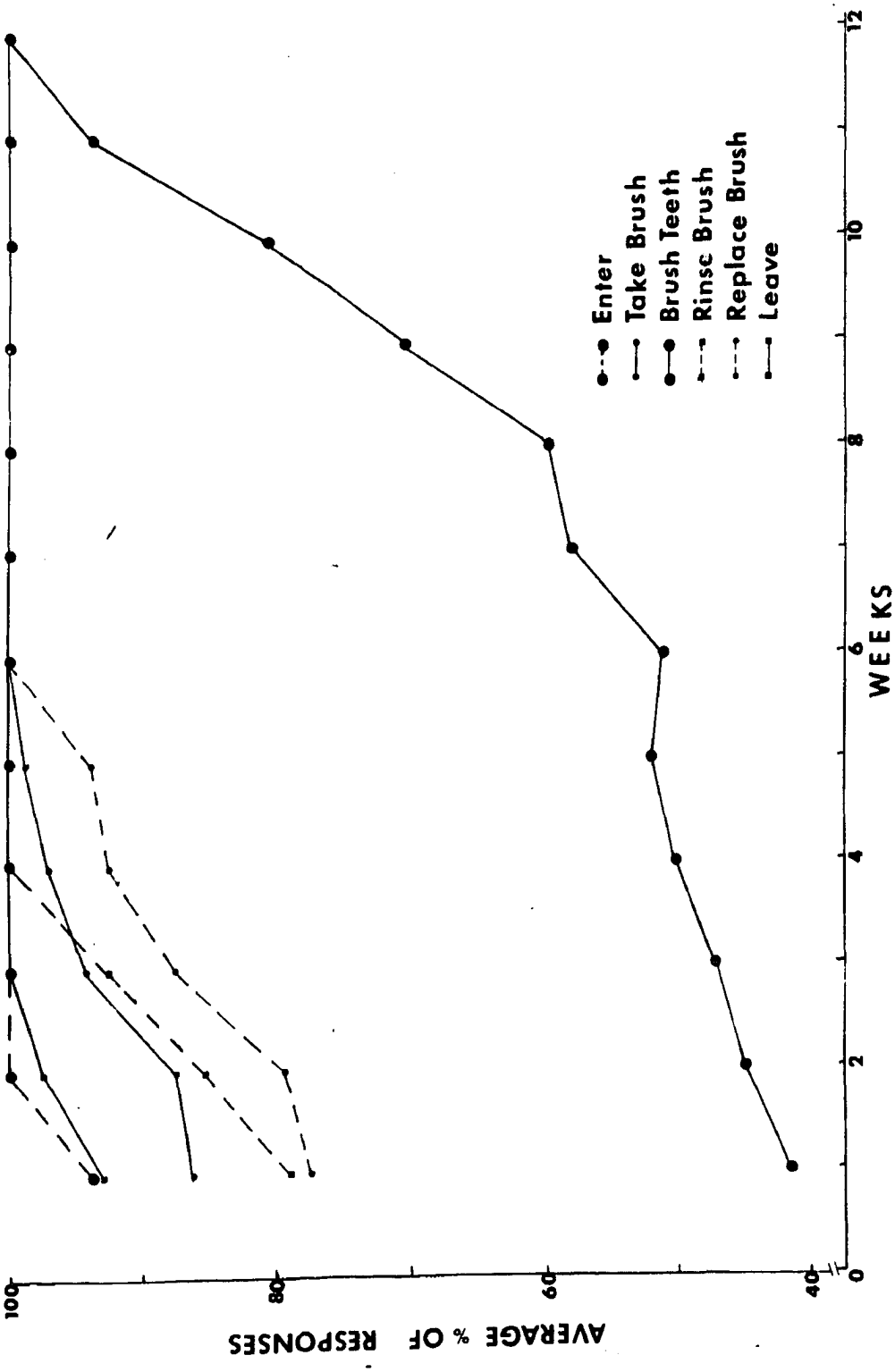

Figure 7

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