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Contingent Video Consequences for Discrimination Performance of Retarded Children

Linda Flatter
Western Kentucky University

Flatter,

Linda T.

1971

CONTINGENT VIDEO CONSEQUENCES FOR DISCRIMINATION PERFORMANCE OF RETARDED CHILDREN

A Thesis

Presented to

the Faculty of the Department of Psychology

Western Kentucky University

Bowling Green, Kentucky

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

by

Linda T. Flatter

January 1971

CONTINGENT VIDEO CONSEQUENCES FOR DISCRIMINATION

PERFORMANCE OF RETARDED CHILDREN

APPROVED Jan. 29, 1971
(Date)

Harry Rober
Director of Thesis

Charles Galloway

Emmett A. Burkeen

John Dean Minton
Dean of the Graduate School

Acknowledgements

The research reported here was supported by a grant to George Peabody College for Teachers (HD-00973) from the National Institute of Child Health and Human Development.

I would like to thank Mrs. Robin Reed for her help in formulating the idea behind the topic which I investigated. Special appreciation goes to the Cloverbottom Hospital and School where I conducted my research. I also acknowledge those children who participated in this experiment. Their cooperation made this work possible.

I would like to thank Dr. Emmett Burkeen for giving his time to make comments regarding this paper. Dr. Harry Robe guided me and made invaluable contributions to the design and completion of this research. I want to thank these men for serving as members of my thesis committee.

Dr. Charles Galloway gave so totally and unselfishly to this project, that I learned what it means to be a professional as well as how to do research. I thank him for directing my research. Dr. and Mrs. Galloway have both made hard work worth doing and worth doing well.

Special thanks goes to my husband, John, who has given me his total support throughout this project. Without his understanding, I would not have been able to spend the time necessary for the completion of this thesis research.

Abstract

Four Ss were selected from the population of residents at Cloverbottom Hospital and School to participate in the present study determining the effectiveness of video presentations as reinforcing consequences for discrimination learning. The task consisted of sorting stimulus discrimination cards on the basis of form and/or color. The S received either "snow" or self-video consequences via a television monitor. Both S-paced sorting and E-paced sorting were employed to determine the effect of each procedure. This study demonstrated that video consequences as well as sorting procedures influenced performance of these Ss. An individual S analysis revealed differential effects across Ss. Results showed a need for further research with the reinforcing function of television being investigated for normal Ss.

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Reinforcement is a pervasive ingredient of behavioral achievement. The magnitude of this ingredient is yet undetermined; however, research demonstrates that a wide range of behavior can be established and maintained simply by manipulating the contingencies of reinforcement (Skinner, 1953; Skinner, 1954). The term "contingency of reinforcement" refers to the relationship between a particular behavior and the consequences of that behavior. Therefore, if behavioral changes are to occur, "the incidence and/or nature of the reinforcing outcomes must be altered" (Bandura, 1969, p. 217).

The effectiveness of a reinforcing event can be determined by making it's acquisition contingent upon a specified response. Lindsley (1964) emphasizes that an event which is reinforcing to one individual may not be reinforcing to another. Research does not indicate the presence of a universally reinforcing event (consequence); but rather that a certain consequence accelerates or decelerates the rate of a specific behavior for a certain individual. Appropriate reinforcing events must be determined for the particular individual whose behavior is to be changed. When these ideosyncratic reinforcers have been determined, an individual's behavior can be changed by delivering these events contingent upon the appropriate behaviors.

An alternative method of viewing positive reinforcement has been developed by David Premack (1959). The Premack Principle may be generalized as follows: "of any two responses, the independently more probable one will reinforce the less probable one" (Premack, 1963, p. 81). Therefore, if one is attempting to accelerate a particular behavior, the opportunity to engage in the higher probability behavior should be made contingent upon the lower probability behavior. This principle has been demonstrated to be effective for controlling the behavior of nursery school children (Homme, deBeca, Devine, Steinhorst, & Rickert, 1963). The children were allowed to play with toys, run, scream, etc. The researchers were able to determine from these observations which behaviors occured most frequently. The high probability behaviors were running and screaming; therefore, the teacher made these behaviors contingent upon sitting and looking at the blackboard (a low probability behavior). Later observations demonstrated that these high probability behaviors maintained the occurance of the low probability behaviors. Classroom management was no longer difficult.

This technique of accelerating behavioral change has varied functional applications. One of the institutions primarily concerned with behavioral achievement (i.e., learning) is the educational system. Teachers have traditionally used many of these techniques of reinforcement on a group basis; however, the individual student has often been overlooked when the contingencies of reinforcement were set. Such consequences as grades and teacher praise have been demonstrated to be effective for most students. But when these consequences prove ineffective for particular students, other potential reinforcers must be investigated. Different response contingent consequences could be arranged for these students if desired results are to be obtained. The important consideration is that the effectiveness of these potential reinforcers be determined for each individual student and not by what is reinforcing for most of the students in the classroom. Since concern is with the individual's achieving to his capacity, the consequences of this achievement must be individually reinforcing.

When traditional events are ineffective, a search must be made to identify effective consequences which will alter behavior. Several alternatives are available to the teacher within the system of Precision Teaching (Kunzelmann, Cohen, Hulten, Martin, & Mingo, 1970; Homme, 1969). The "target" behavior must first be identified and precisely described. Predetermined consequences for this behavior must be stated specifically to the student. The child should also be aware of the consequences of alternative behaviors which are not appropriate.

The target behavior should be observed and recorded under normal conditions in order to determine the baseline performance. The teacher may then change the normal response contingent consequences (although many other options for change would be open to her). At this time, the teacher would inform the student of the new consequence of his behavior. With these contingencies in effect, the teacher would again observe and record the student's behavior. Through direct and continuous recording, the teacher would evaluate the effectiveness of the intervention of this consequence. The amount of behavioral change can easily be reported in objective terms (Skinner, 1953). An individual analysis of this behavioral change will determine the effectiveness of the stated consequence for a particular student. If there is no appreciable change, then other potentially reinforcing consequences might be investigated. An alternative method might be to change the curriculum (program event) and record the student's performance. This procedure might indicate that it was not the consequence of a behavior, but rather the program event itself which was inappropriate for this particular student.

This set of procedural steps is comparable to tactics used in the experimental analysis of behavior. Lindsley (1964) states that "the sensitivity of this method to subtle changes in individual rate, efficiency and interaction patterns permits the study of single individuals." Sidman (1960) argues that "an intrasubject replication design is the most convincing means of demonstrating a functional relationship between behavioral phenomena and the controlling conditions (p. 88)." Furthermore, intrasubject replication eliminates intersubject variability as a factor in the evaluation of an experimental finding: "It operates in terms of a baseline of intrasubject variability only (Sidman, 1960, p. 88)."

The focus of the present study is upon the application of reinforcement techniques in an attempt to habilitate retarded behavior. The purpose of this research was to determine the extent to which video presentations reinforce visual discrimination in moderately retarded children. Research indicated (Barrett and Lindsley, 1962) that retarded children often learn simple discrimination tasks faster than normal children. This observation was one of the factors influencing the choice of tasks for the present study. Discrimination learning is highly important within the educational framework; therefore, the results of this study might also have practical application.

Scant research has been done using dynamic video as a reinforcing consequence. Lindsley (1964) demonstrated the reinforcing properties of motion pictures upon human infants. His research indicated that the rate of response was more accelerated when using moving pictures than when auditory or still-life presentations were consequences of the infant's kicks to a foot panel in his crib.

Kagan (1970) studied the acquisition and maintanence of attention in infants. His research determined that movement as well as sharp contours were the most powerful factors in gaining the children's attention. Video presentations are dynamic and therefore have the physical characteristics necessary to recruit attention.

. . .

Lovitt (1968) established that children demonstrate an operant preference for certain rates of auditory presentations (compressed vs expanded narration). He found that it was not the narration itself which was a reinforcing event, but rather, the rate of presentation. The present study was conducted to determine whether retarded subjects would demonstrate a preference between two types of video presentations which would therefore act as a reinforcing consequence for discrimination learning.

Lovitt's research did not support the assumption that operant preference was synonomous with the stated verbal preference. Performance on the discrimination tasks alone served as the measure of the reinforcing properties of video presentations. Auditory presentations had differential effects across subjects; it was presumed here that different video consequences would also have different functions across subjects. If one is to use either auditory or video presentations as reinforcers, the individual subject's preference must be empirically demonstrated.

This study investigated whether response contingent video presentations would act as reinforcers, and would, therefore, accelerate discriminative performance. The research compared visual "snow" with live self-video to determine relative effectiveness as visual reinforcers. An intrasubject analysis was used to identify the effectiveness of the specified consequences for each subject.

Method

Subjects. Eight Ss were chosen from the population of residents at Cloverbottom Hospital and School in Donnelson, Tennessee. Four Ss were selected from this group to participate in the study. The sex, Chronological Age (CA) and Mental Age (MA based on the Peabody Picture Vocabulary Test) for each S were as follows:

S1- male; CA, 12 yr. 7 mo.; MA, 5 yr. 2 mo.

S2- female; CA, 17 yr. 11 mo.; MA, 8 yr. 9 mo.

S3- female; CA, 16 yr. 11 mo.; MA, 4 yr. 8 mo.

S4- female; CA, 8 yr. 4 mo.; MA, 3 yr. 1 mo.

The preliminary criterion for selection was the ability of the S to follow the E's instructions to place 15 blank 3x5 in. index cards into "shoe" boxes arranged on a table in front of him. All eight Ss were selected to continue to the next phase of the experiment.

Apparatus. One deck of 15 blank 3x5 in. index cards and five decks of stimulus discrimination cards were used. The five stimulus discrimination decks were ordered to represent an assumed increase in difficulty level which presumably would vary for each individual S. Each of the five decks contained 45 cards, 15 each of three different stimulus types (i.e., forms and/or colors). The five decks consisted of the following stimulus typed cards:

deck I– one solid yellow circle, one solid blue circle, one solid red circle

deck II– one square, one triangle, one circle (black ink drawings of forms only)

deck III– one five-sided figure, one six-sided figure, one seven-sided figure (black ink drawings of forms only)

deck IV– one five-sided figure, one six-sided figure, one seven-sided figure; five figures of each stimulus type were solid red, five were solid blue, and five were solid green (forms were identical to those in deck III)

deck V– three "nonsense" shapes drawn by the E in black ink

Each figure was drawn on a separate 3x5 in. white, unlined index card; and each card was laminated with plastic to prevent smudging. Sorts were to be made into one of three "shoe" boxes (8x14 in.), each of which had one of the three stimulus types placed on the side of the box facing the S.

The experimental room contained a table (2.5x2.5 ft.) and two folding chairs. The three "shoe" boxes were placed side by side on the table which was directly in front of the S's chair. A solid state television monitor (12 in. screen) was placed behind the boxes in full view of the S. The E's chair was approximately two ft. to the left of the S's chair. An adjoining control room contained automatic programming equipment which timed the duration of each session and recorded the number of video presentations provided to the S. A closed circuit television camera, also located in the adjoining room, was focused through a one-way mirror directly upon the S while he was sitting at the table. The television monitor was wired to allow the E to control manually the presentation of video consequences via a hand switch located in the experimental room. The wiring of the hand switch into the monitor's circuit permitted a normal picture on the picture tube to appear within .5 sec. following closure of the switch.

Procedure. Potential Ss were individually brought into the experimental room and seated. Each S was asked to put 15 blank 3x5 in. cards into the boxes which were on the table. Those Ss who followed these instructions were selected to continue to the assessment phase.

Assessment of task difficulty. In order to determine the task with which each S would produce sorting errors, the E began with deck I and asked each S to "Place each card in the right box; the box that it goes in." Sample stimulus cards for each deck were attatched to the front of the corresponding "shoe" box. A "correct sort" consisted of placing a card in the box labeled with the stimulus card of the same form and/or color on the card taken from the deck.

Each S was requested to sort all five decks of stimulus cards. The five decks were ranked in order of difficulty (i.e., number of errors per each deck of cards) for each S.

Criterion for task selection consisted of choosing the deck with which the individual S made 15 or fewer correct sorts. If the number of errors were relatively consistent across tasks, one of the decks was arbitarily chosen. At this point, the E terminated the assessment session and recorded the discrimination task to be used in subsequent sessions with each S. This assessment procedure eliminated four potential Ss who made fewer than five sorting errors on any of the five decks.

The number of sessions allotted to the various experimental phases was not preset. Instead, a sequence of phases was planned through which the S might progress, depending upon stability of performance within each phase. Table 1 shows the phase sequence for each S and the number of sessions allowed for each phase. After each completed session, the S was given ten cents for attending, regardless of his discrimination performance during the session. A description of each experimental phase follows:

Contingent "snow"/S-paced sorting. In this phase the S was free to hold the deck of cards and sort them at will. After each correct sort, the S was presented with 5 sec. of "visual noise" ("snow") on the television monitor. There were no planned consequences arranged for incorrect sorts. This phase consisted of at least six sessions and served as the baseline of performance. Each session was scheduled to last no longer than 10 min. Otherwise, the session was terminated when the S had sorted all cards in the deck.

TABLE 1

Number of Sessions in Each Phase for Each Subject

Successive Phases	Subjects S1	S2	S3	S4
(1) contingent "snow"/ S-paced sorting	8	8	7	6
(2) contingent self-video/S-paced sorting	5	11	13	26
(3) contingent "snow"/ E-paced sorting	19	26	—	9
(4) contingent self-video/E-paced sorting	26	25	—	6
(5) contingency reversal, errors/self-video	10	6	56[a]	—
(6) contingency reversal, correct/self-video	6	—	—	—

[a]This number represents the total number of contingency reversal sessions, including the "interim" phase.

Contingent self-video/S-paced sorting. The same procedures were followed in this phase except that a live, self-image was substituted for "snow" as the consequence of each correct sort. There were still no planned consequences arranged for incorrect sorts. The number and the length of sessions was determined by the same method as employed in the first experimental phase.

Contingent "snow"/E-paced sorting. Since the S was previously free to continue sorting while the video consequence was being presented, it was possible that incorrect responses might also have been reinforced by the video presentations. For those Ss who failed to improve in their discrimination performance, an E-paced sorting situation was initiated to attempt to eliminate this possibility. The E held the cards and handed them, one at a time, to the S. The S was allowed to sort only when video content was not being presented. It was necessary to return to "snow" as a consequence of a correct sort in order to compare data across phases. A 5 sec. "inter-trial-interval" during which no video content was presented was the consequence of each incorrect sort. This procedure was introduced to decrease the rate at which a S was allowed to sort the cards. Therefore, the probability of card sorting, itself, being reinforcing was decreased.

Contingent self-video/E-paced sorting. During this phase, each correct sort was followed by 5 sec. of self-video. The consequence of an incorrect sort was a 5 sec.

inter-trial-interval. Otherwise, the same procedure was followed as in the previous experimental phase.

Contingency reversal/contingent self-video for errors. This phase provided a control situation in which 5 sec. of self-video was presented as a consequence of each incorrect sort and 5 sec. of inter-trial-interval was the consequence of each correct sort. The experimenter paced procedure was employed during this phase with two Ss and the subject paced sorting with one S.

Contingency reversal/contingent self-video for correct. This phase reinstated the presentation of 5 sec. of the self-video consequence for each correct sort and 5 sec. of inter-trial-interval as a consequence of each incorrect sort. E-paced sorting was used during this phase. This procedure was employed only when the previous contingency reversal had demonstrated a change in responding.

There were initially two sessions for each S in the morning and two sessions during the afternoon. This was changed to three sessions in both the morning and afternoon. There were approximately five min. between sessions. This time allowed the E time to record the data following each session. The experiment was terminated when the Ss were no longer available for participation in the experimental sessions.

Results

Assessment. Table 2 shows the number of correct sorts made by each S with each of the five decks. This information reveals that task difficulty had to be determined for each S individually. A description of the task selection for each S follows:

S1– deck IV; one five-sided figure, one six-sided figure, one seven-sided figure; five figures of each stimulus type were solid red, five were solid blue and five were solid green

S2– deck V; three "nonsense" shapes drawn in black ink

S3– deck I; one solid yellow circle, one solid blue circle, one solid red circle

S4– deck IV; same as description for S1

Rate analysis. The data were analyzed by both rate of response (correct and incorrect sorts) and percentage correct. The equation for determining rate of response is as follows:

$$\text{Rate} = \frac{\text{number of sorted cards}}{\text{working time}}$$

This analysis reflects the length of time necessary for the S to make a certain response or group of responses. The "number of sorted cards" included the total number of correct (or incorrect) sorts made by the S during the session. The "working time" refers to the time required to sort a complete

TABLE 2

Number of Correct Sorts Per Discrimination Task for Each S

Subject	Discrimination Deck				
	I	II	III	IV	V
1	45	45	17	15[a]	29
2	25	27	9	12	15[a]
3	15[a]	10	14	19	19
4	18	28	21	15[a]	19

[a]Indicates the task which was selected

deck of discrimination cards. The rate of correct as well as the rate of incorrect sorts was important within this study.

Computation of S-paced sorting rate. During those phases in which the S paced his own responding, the total session time was used to compute the rate correct and incorrect. Since the S was free to sort at any time during the session, working time was functionally synonomous with session time. These rates were computed for each session for each individual S. Time was recorded in terms of min. and, therefore, the rate was based on the number of correct or incorrect sorts per min.

Computation of E-paced sorting rate. During those phases in which the E paced the S's responding, it was necessary to modify the previously mentioned procedures for calculating rate. Session time was no longer the same as working time because of the inter-trial-interval consequence for incorrect sorts and because the S was not permitted to sort during video presentations. Working time, for this procedure, was computed by the following equation:

working time= (session time)-(i-t-i + video-on time)

The rate correct and the rate incorrect were recorded for each S in the same manner as previously indicated.

The reader must be cautioned not to make rate comparisons across these two pacing conditions, since the rate was not computed by the same method. However, it is perfectly legitimate to make rate comparisons within these two pacing procedures.

Accuracy (percentage) analysis. The most widely accepted method of determining changes in accuracy is by calculating the percentage correct and comparing this to past performance. This study was concerned with assessing the changes in accuracy of each S both during and across phases in order to determine the effectiveness of specified video consequences. The percentage of correct sorts was recorded for each session for each individual S. These percentages may be compared across all phases since pacing procedures were irrelevant in determining the percentage correct.

Both rate and accuracy were analyzed because it was possible that a variable could affect the rate of responding without modifying accuracy. Rate appeared to be more sensitive than accuracy to slight changes in behavior, since rate takes into account the amount of time a S required to complete a task, as well as the distribution of errors and correct responses emitted during task performance. The data indicated that there were systematic but differential effects across Ss. Therefore, a description of individual S performance follows:

S1— (see Figure 1 and Figure 2) This S's rate correct and rate incorrect stabilized within the contingent "snow"/S-paced sorting phase and showed only slight increase during the contingent self-video/S-paced phase. The percentage of correct sorts was stable, within the chance range of performance, for these first two experimental phases. During the contingent "snow"/E-paced phase there was a reversal in the rate correct and the rate incorrect. The percent correct remained at chance for five sessions during this phase; however, within two sessions the S reached 100% accuracy, which remained relatively consistent for the duration of this phase. The rate correct was continuing to accelerate when the next experimental phase was initiated; the rate incorrect showed no trend toward accelerating or decelerating during this contingent "snow" phase. When the video consequence was changed to self-video/E-paced sorting, there was a decelerating trend in the S's rate of correct responding. The S's accuracy showed no marked change during this phase; however, his accuracy decreased and stabilized within the range of chance when the consequence of each incorrect response was self-video. This contingency reversal (self-video, errors/E-paced) showed an acceleration of rate incorrect. The rate correct decelerated immediately for the first four sessions, then it began to rapidly accelerate. Since the contingency reversal showed an effect, the final experimental phase (contingent self-video, correct/E-paced) was initiated. The S's accuracy increased to 96% in the second session of this phase and to 98% when the experiment was terminated. The S's rate incorrect decelerated and stabilized during this last phase. The rate correct accelerated, initially; however, a decelerating trend was indicated during this phase.

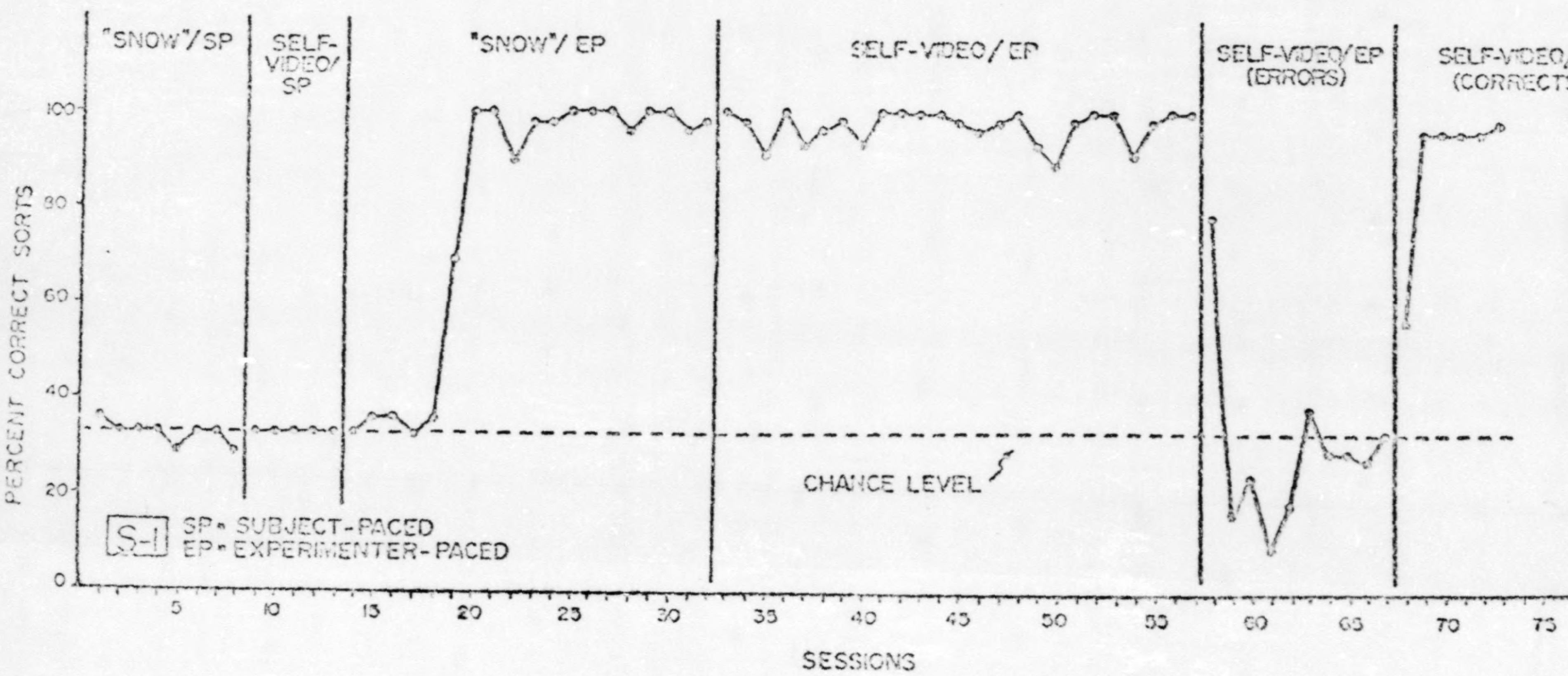

"SNOW"/SP
SELF-VIDEO/SP
"SNOW"/EP
SELF-VIDEO/EP
SELF-VIDEO/EP (ERRORS)
SELF-VIDEO/EP (CORRECTS)
PERCENT CORRECT SORTS
100
80
60
40
20
0
CHANCE LEVEL
S-1
SP = SUBJECT-PACED
EP = EXPERIMENTER-PACED
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
SESSIONS

Figure 1

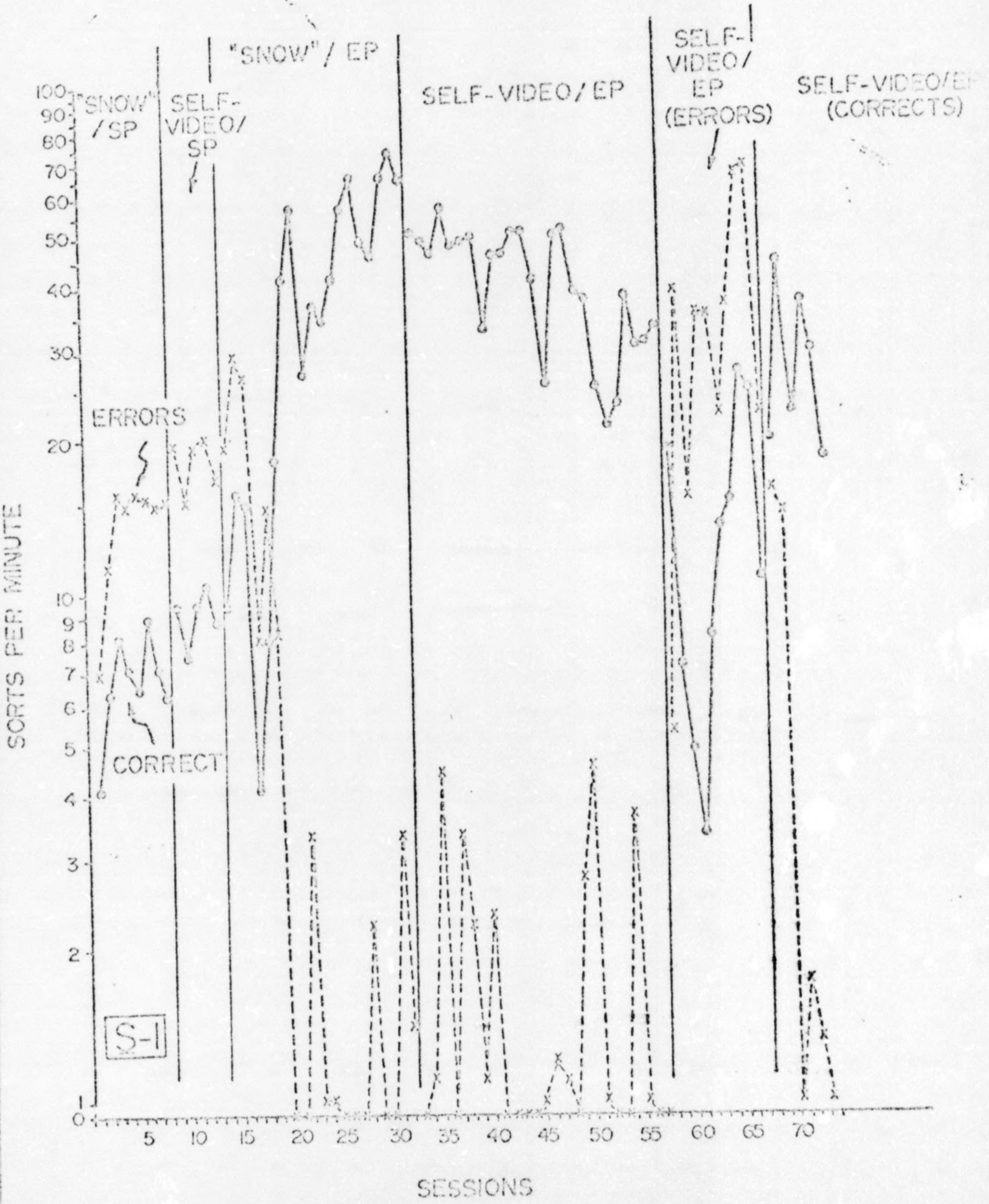
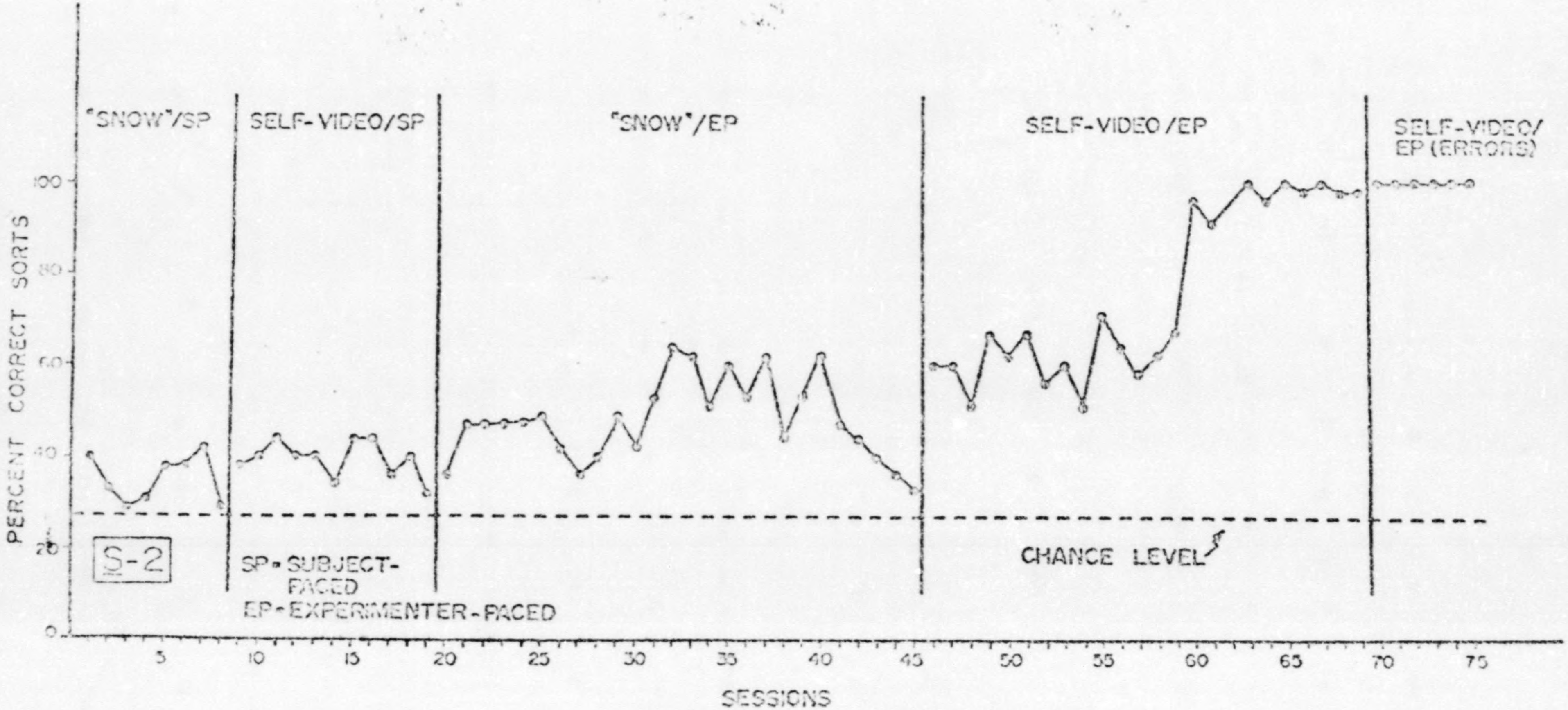

"SNOW"/SP
SELF-VIDEO/SP
"SNOW"/EP
SELF-VIDEO/EP
SELF-VIDEO/EP (ERRORS)
SELF-VIDEO/EP (CORRECTS)
ERRORS
CORRECT
S-1
SORTS PER MINUTE
SESSIONS
0
1
2
3
4
5
6
7
8
9
10
20
30
40
50
60
70
80
90
100
5
10
15
20
25
30
35
40
45
50
55
60
65
70

Figure 2

S2- (see Figure 3 and Figure 4) This S's rates and percentage correct were essentially stable during the first two experimental phases (with a slight acceleration in rate correct evident in the second phase). Her performance became more accurate during the contingent "snow"/E-paced phase; however, she did not exceed 64% correct sorts. During the last five sessions of this phase, a decrease in accuracy was obtained. Both rate correct and rate incorrect peaked in this phase; but both returned to a lower, stable rate of response. The S's rate correct and rate incorrect revealed undifferentiated acceleration within this phase and the rate correct became more accelerated than rate incorrect. This trend was reversed when the next phase was initiated. At this point the consequence for a correct sort was changed to self-video/E-paced. The S's accuracy did not exceed that of the previous phase during the first fifteen sessions. During the sixteenth session, the S reached 96% accuracy and her performance increased to 100% correct over the remaining nine sessions. The rate of correct responding became accelerated under this contingency of reinforcement. This trend continued through subsequent sessions of this phase. The error rate decelerated and stabilized within one incorrect sort per min. Data from the contingency reversal, errors/E-paced phase indicated that the S's rate of correct responding was decelerating. No incorrect sorts were made during the final phase; therefore, she received no video consequences. The experiment was terminated after this phase.



"SNOW"/SP
SELF-VIDEO/SP
"SNOW"/EP
SELF-VIDEO/EP
SELF-VIDEO/ EP (ERRORS)
PERCENT CORRECT SORTS
S-2
SP = SUBJECT-PACED
EP - EXPERIMENTER-PACED
CHANCE LEVEL
SESSIONS

Figure 3

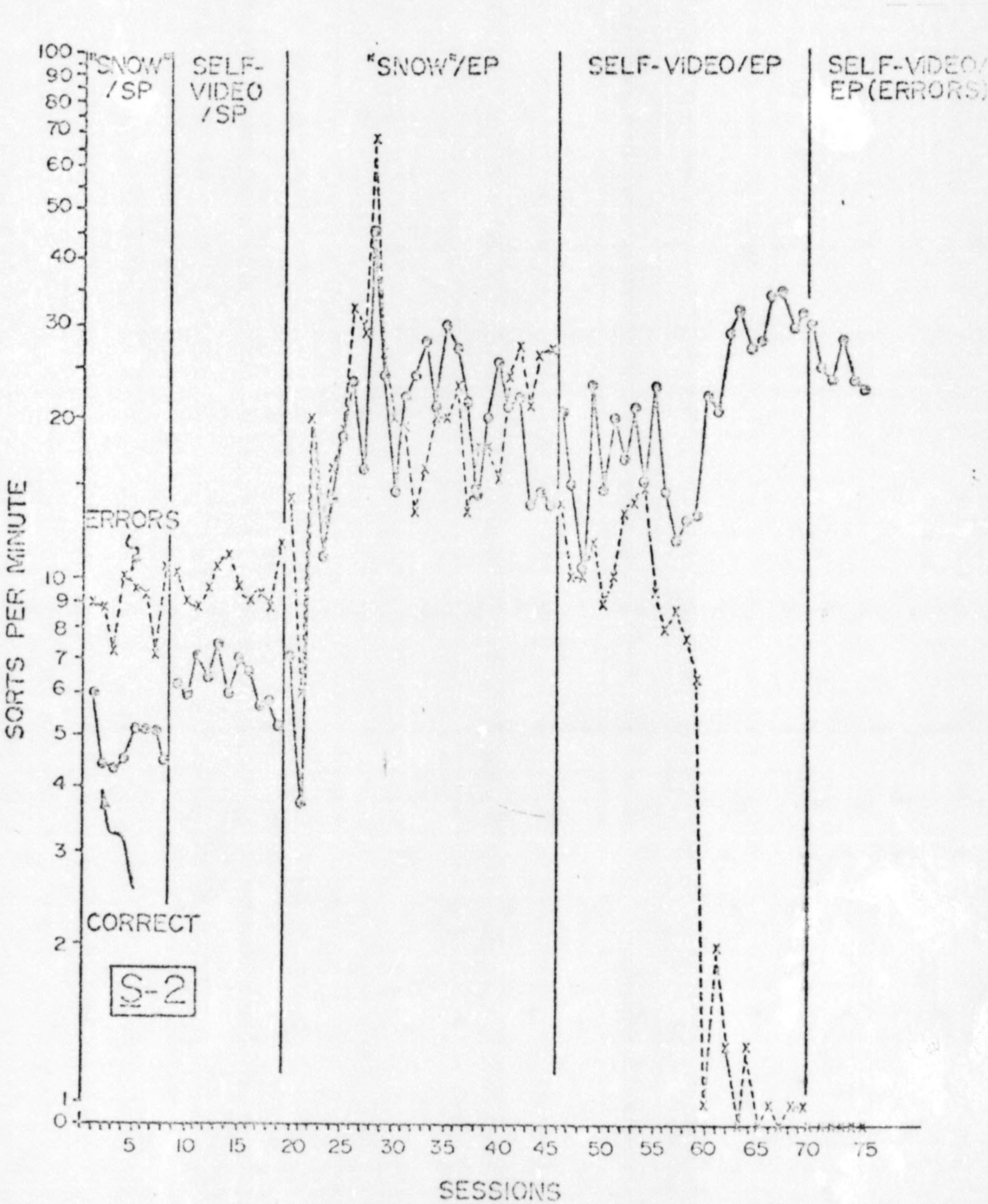
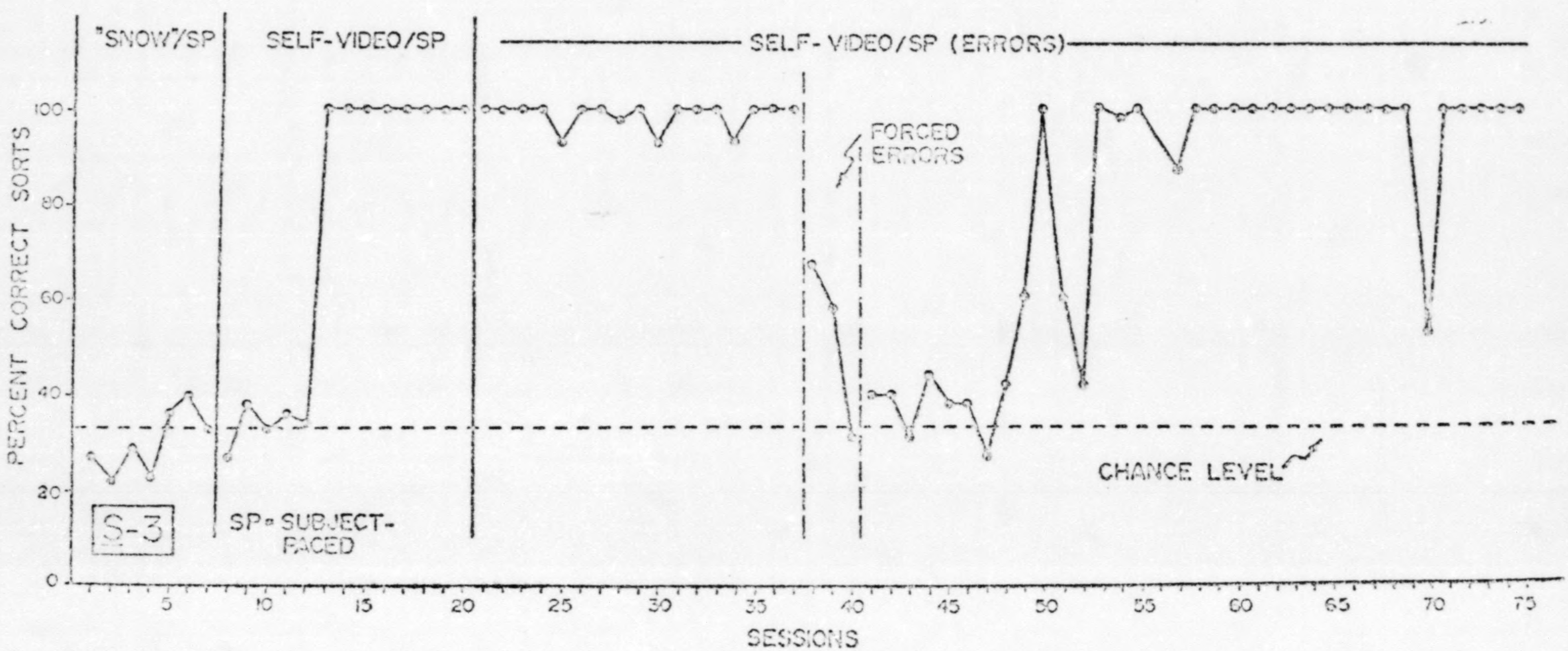

"SNOW"/SP
SELF-VIDEO/SP
"SNOW"/EP
SELF-VIDEO/EP
SELF-VIDEO/EP(ERRORS)
SORTS PER MINUTE
ERRORS
CORRECT
S-2
SESSIONS
100
90
80
70
60
50
40
30
20
10
9
8
7
6
5
4
3
2
1
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75

Figure 4

S3— (see Figure 5 and Figure 6) This S's rate correct showed an accelerating trend during the contingent "snow"/S-paced sorting phase. The error rate was consistently higher than the rate correct, and remained relatively stable during this initial phase. The S's percent correct slightly increased during the last three sessions of this phase. Both rate correct and rate incorrect held stable for the first five sessions of the contingent self-video/S-paced sorting phase. Then the rate of correct responding rapidly accelerated during the sixth session of this phase and stabilized at this level for the duration of the phase. The error rate decreased to zero during this sixth session and did not vary while this procedure was in effect. The S's accuracy was consistent for these first five sessions; however, she reached 100% accuracy in the sixth session. Since the S achieved this level of performance during this phase, the S-paced sorting procedure was retained with her for the continuation of the experiment.

The rate correct continued in an upward trend and then stabilized during the contingent self-video, errors phase; the rate incorrect showed no trend toward acceleration. The S's accuracy was so consistently high that a three session "interim" phase was arranged in order to "force" the S to come into contact with the reversed contingency and to produce errors. During this interim phase, the "shoe" box to the extreme left of the S was covered, thus forcing her to make at least 33% incorrect responses and therefore to receive



"SNOW"/SP
SELF-VIDEO/SP
SELF-VIDEO/SP (ERRORS)
FORCED ERRORS
PERCENT CORRECT SORTS
CHANCE LEVEL
S-3
SP= SUBJECT-PACED
SESSIONS

Figure 5

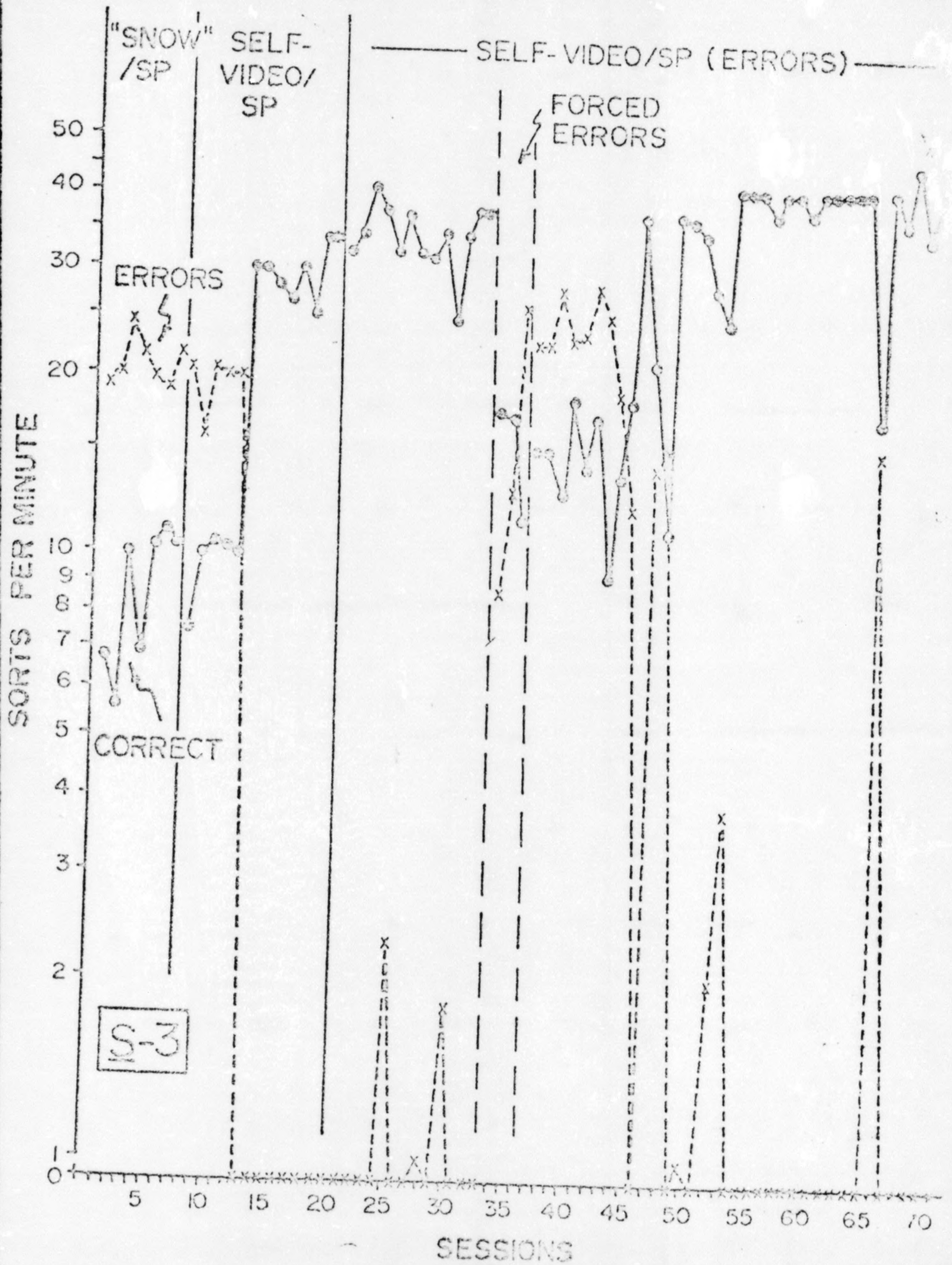
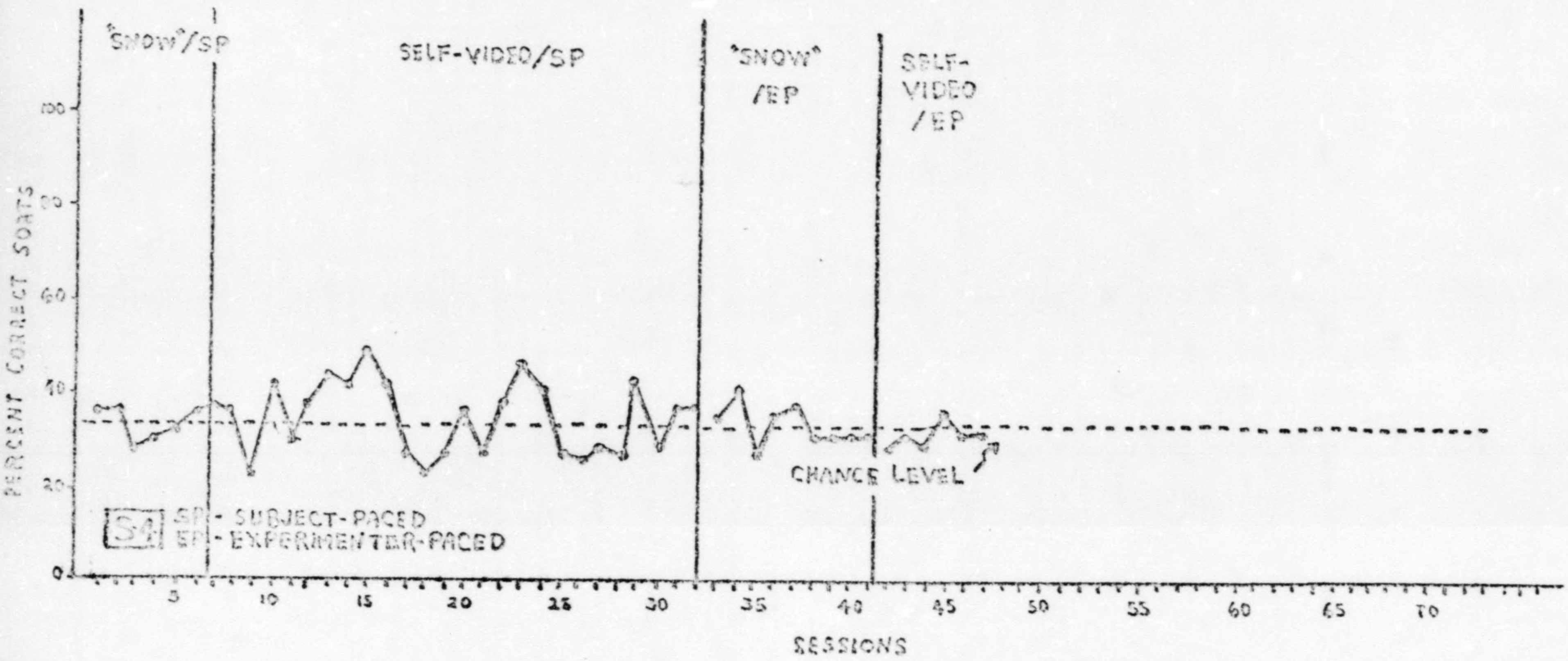

"SNOW" /SP
SELF-VIDEO/SP
SELF-VIDEO/SP (ERRORS)
FORCED ERRORS
ERRORS
CORRECT
S-3
SORTS PER MINUTE
SESSIONS

Figure 6

self-video consequences for at least fifteen sorts. The S's percentage correct decreased to below chance expectations during the interim phase. Her error rate accelerated rapidly under these conditions and there was a decelerating trend in rate correct. Both of these rates stabilized when the self-video, incorrect phase was reinstated (i.e., when the far left box was uncovered). The S's accuracy remained stable, within the range of chance, during the first eight sessions of the second self-video, incorrect phase. During the eighth session, the S's rate of correct responding began to accelerate and finally stabilized at a level higher than during any of the previous phases. The rate incorrect decelerated rapidly at this same point and stabilized at zero incorrect sorts per min. The S reached 100% accuracy during the tenth session of this phase and maintained this level of performance for the duration of this final phase (with the exception of six sessions in which the S made incorrect sorts).

S4- (see Figure 7 and Figure 8) This S, consistently, within both sorting procedures, demonstrated a higher error rate than rate correct. She also did not demonstrate any appreciable increase in accuracy across all phases. During the S-paced sorting phases, the S's rate correct and rate incorrect showed trends toward unsystematic acceleration; however, her rate, as well as her percentage correct were slightly unstable. The S's highest percentage correct was evidenced during the contingent "snow"/S-paced sorting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SELF-VIDEO/SP
"SNOW" /EP
SELF-VIDEO /EP
PERCENT CORRECT SORTS
CHANCE LEVEL
S4
SP - SUBJECT-PACED
EP - EXPERIMENTER-PACED
SESSIONS
0
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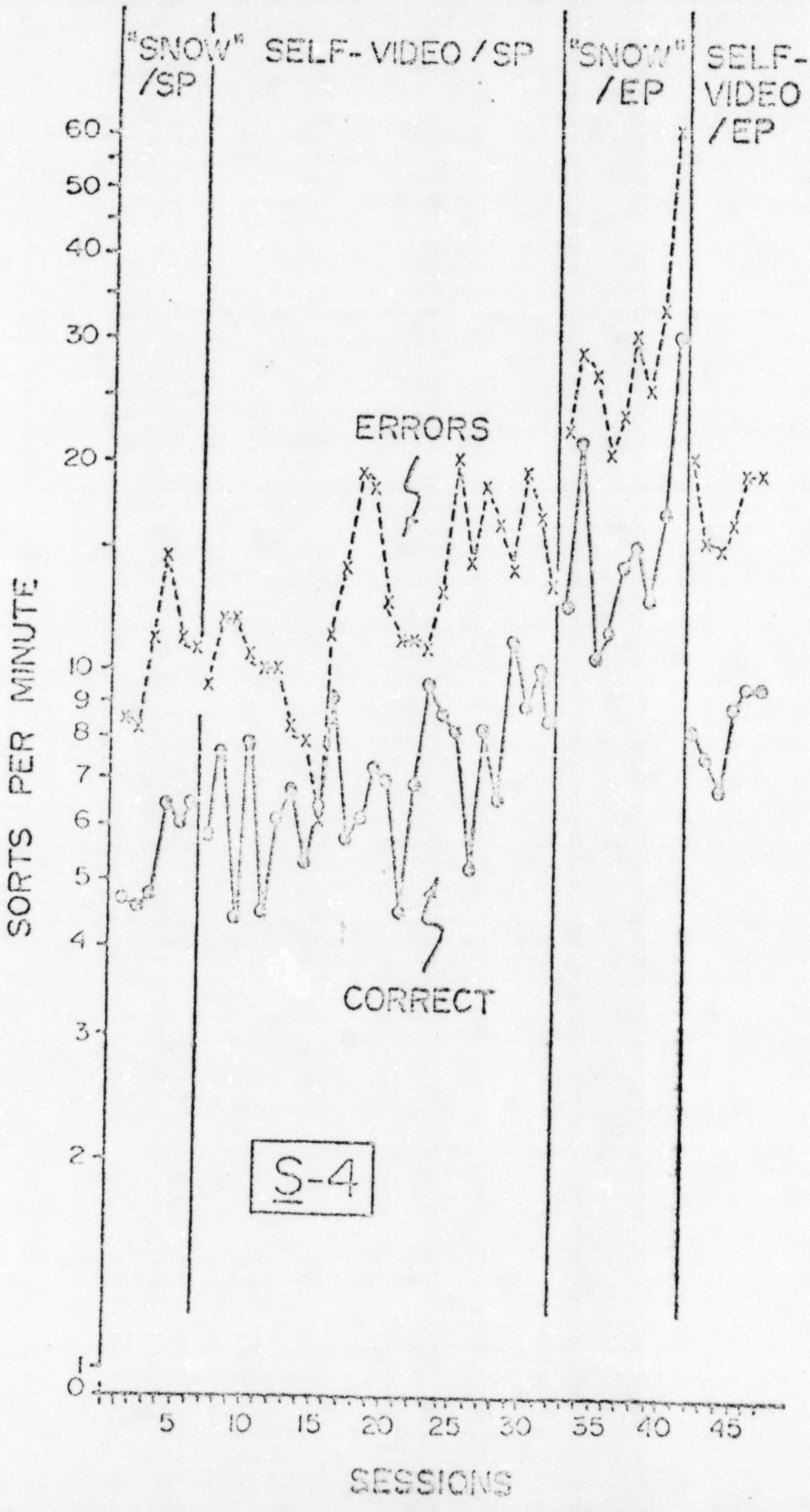
55
60
65
70

Figure 7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SELF-VIDEO / SP
"SNOW" /EP
SELF-VIDEO /EP
SORTS PER MINUTE
60
50
40
30
20
10
9
8
7
6
5
4
3
2
1
0
ERRORS
CORRECT
S-4
5
10
15
20
25
30
35
40
45
SESSIONS

Figure 8

phase, when she reached 51% accuracy. When the E-paced sorting procedure was used with contingent "snow" consequences, rate correct and rate incorrect showed undifferentiated acceleration. Her accuracy decreased and stabilized within the range of chance under this procedure. During the contingent self-video/E-paced sorting phase, the S's rate of responding rapidly decelerated and a trend toward stability was noticed when the experiment was terminated. This S was taken out of school and was therefore unable to participate in the final phases of the experiment.

Discussion

The results of this study revealed that contingent video does serve as an effective reinforcer for some children. There were, however, differential effects across Ss. S2 and S3 demonstrated an increase in accuracy (100%) when self-video presentations were contingent upon making correct discriminations of forms and/or colors. S1 learned to make correct discriminations during the response contingent "snow" phase of the experiment. This result would imply that video presentations may have reinforced this particular type of response (correct sorts). However, with these data alone, such a statement should not be made (Baer, Wolf, & Risley, 1968). Because of the durability of S1's correct sorts under the contingency reversal condition, it is doubtful that contingent video was solely responsible (if at all) for the rapid acquisition of sorting accuracy during the second phase.

As previously mentioned, it was necessary to change S1, S2, and S4 from a S-paced to an E-paced sorting procedure. S3 continued to pace her own sorting. S1 and S2 demonstrated changes in accuracy when the E pacing procedure was in effect. This inter-trial-interval decreased the probability that card sorting was the reinforcing event. The S was allowed equal time between correct and incorrect.

sorts; however, different consequences were presented for these two types of responding. Therefore, it was more likely that the video consequence would reinforce correct responses rather than that the S was being reinforced intermittantly for just indiscriminate sorting of the cards. This procedure may also have created enough time delay between reinforcers to eliminate any type of "superstitious" pattern of responding. (For example, during the contingent self-video/S-paced sorting phase, S1 sorted the cards according to color rather than by form, which was the correct discrimination. His pattern changed when E pacing was introduced.)

The control procedure, contingency reversal, errors, showed that self-video consequences were, in fact, functioning as reinforcing events for S1's responding. Not only did he learn to make the correct discriminations, but also that his responses were demonstrated to be influenced by self-video presentations. Therefore, the results indicate that self-video consequences proved to be an effective reinforcer for this S.

The control phase in which the video consequence was made contingent upon errors did not prove effective with S2 or S3. S2 learned to make correct discriminations between forms during the contingent self-video/E-paced sorting phase. She emitted no errors during the reversal phase and therefore did not come into contact with the shift in the contingencies. This response pattern placed the S on a form of functional extinction. Although her accuracy did not decrease, there was a decelerating trend in her rate of correct sorting, supporting the "functional extinction" hypothesis. Since the experiment had to be terminated after the sixth session of this phase, it is not known whether the reversal would have eventually produced any change in the S's accuracy. The data only suggests that S2 learned to make accurate discriminations when self-video/E-paced sorting procedures were in effect. No other claims can be made for the effectiveness of these video consequences for this S.

S3 demonstrated an increase in accuracy during the contingent self-video/S-paced sorting phase. However, the control phase was ineffective in reversing the response pattern. The data do not indicate conclusively that contingent video presentation was the effective variable for this S.

A question was generated from the Ss whose responding failed to reverse during the control phase. This failure to reverse may have been produced by an instructional control conflict. The E's initial directions were to "place the cards in the right box...." During the contingency reversal phase, the video consequences were arranged for errors; thus, the contingencies during this phase were in direct contradiction to the initial verbal instructions programmed by the E. A future study could be designed to replicate the present study, but systematically vary only the E's directions.

The Ss who did not reverse may have been responding to the E's cue (the right box) rather than to the video consequences.

It is interesting to note that even when accuracy was not affected by video presentations, in some instances the rate of responding was influenced. S1's rate tended to decelerate when self-video content was presented, even though his accuracy did not change (with the control phase as an exception). After S3 had reached 100% accuracy, her rate of responding remained relatively consistent across phases. A deceleration of rate may indicate that the S was taking more time to view the video consequence. When this deceleration is not present, performance may not be affected by video content. This relationship is merely speculation; however, future research could investigate this hypothesis.

S4 did not demonstrate any consistent increase in accuracy within any experimental phase. Neither "snow" nor self-video consequences proved to be effective reinforcers. The results from S4 may best be analyzed in terms of the Premack principle. In order to be defined as a high probability response, video watching would have to be a behavior in which the S would choose to engage, in preference to other behaviors. The data indicate that video watching is not a reinforcing event for correct card sorts for this S. This may be explained by the low probability of video watching, itself. The probability of television watching could be empirically determined by observing the S while she had the opportunity to engage in various activities (i.e., watching different video presentations, playing with a doll, eating candy, etc.). That behavior which had the highest probability of occurance could be made contingent upon correct card sorting. It was presumed that television watching had become a high probability behavior for many individuals; however, research has neglected to investigate the potential reinforcing properties of television.

The design of the present study allowed no claim to be made for the special function of self-video or "snow" as opposed to other forms of program content (i.e., pictures of friends, teachers, trees, etc.) which were not investigated. Lindsley (1964) has found that moving pictures were more effective reinforcers than auditory or still-life presentations for human infants. The implications for future research in the area of video consequences for behavior are numerous.

There can be many educational implications derived from the present study. The task, itself, is indicative of the type of skill that is required within the educational system. A child must be able to make accurate discriminations in order to perform adequately in school. Before he can learn to read or write, the student must learn to discriminate visual symbols. This process may be enhanced for some children by using video consequences contingent upon correct responses.

Future research, using a modification of this study's design, could be implimented using normal $\underline{S}$s. This would, hopefully, produce results which could be applied to a normal classroom situation. Televisions are now ubiquitous within school systems. However, television is presently being used for its stimulus potential only. It is a part of the curriculum which operates as a teacher's aid. This facet of television has proven effective; however, the present study demonstrates that there is a possibility of exploiting the consequence function of television as well. Few alterations would be needed to convert the classroom television into an agent capable of presenting reinforcing consequences for appropriate behavior. The content may remain educational, but be presented to the student as a reward for completing an assigned task. If educational programs did not reinforce the student's classroom performance, then other video content could be investigated.

This study has demonstrated that video consequences are effective reinforcers for some children. Much research is needed to find other types of video content which will also serve as reinforcers. This type of reinforcement will not be needed for those students who achieve satisfactorily within the traditional framework of education. For the student who is insensitive to typical reinforcers, contingent television might represent a powerful, but presently untapped, classroom option.

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