

Implicit Instructions and Social Influence
as Factors in Generalized Responding

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Abstract

Effects of priming procedures on generalized imitation were studied. Experiment I compared instructions ("Do this") given only at the outset with instructions before modeling each response; both produced generalized imitation. Observing a confederate after responding was initiated had little effect on imitation whether or not the confederate imitated differentially. Experiment II showed that observing a confederate resulted in generalized imitation in the absence of verbal instructions, although the children reliably reported whether imitation of a given act was reinforced. Experiment III examined three aspects of confederate performance in establishing generalized imitation: there were significant effects due to generalized/differential performance (A), and same/different response (B), but not to reinforcement/no reinforcement (C); A X B and A X C interactions were significant. Situational demands, experimenter social characteristics, degree of social control in the experimental context, reinforcement/punishment contingencies, and task difficulty seem to influence generalized responding.

Implicit Instructions and Social Influence
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The effectiveness of differential reinforcement procedures in establishing and maintaining discriminated performance has been well documented in both basic and applied research. Yet there remain exceptions in which systematic and precise use of differential reinforcement has failed repeatedly to produce the expected differential performance. One example is research on "generalized imitation."

In a typical generalized imitation experiment the experimenter demonstrates a series of simple acts (like putting both hands on top of his head) in sequential order, allowing the child time to respond after each demonstration. Imitating some responses is consistently followed by reinforcement, while imitating other responses is consistently nonreinforced. In many experiments the modeling of each response is preceded by a verbal instruction such as "Do this," or "Say," although in some studies these instructions or comparable ones occur only at the beginning of the first session. Generalized imitation is the phenomenon of continued imitation of unreinforced responses in such a context.

Since the initial demonstration of generalized imitation by Baer and Sherman (1964), numerous studies have replicated the

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generalized imitation effect using a variety of response classes, situation and procedural variations, and employing children of varying ages, clinical classifications and other demographic characteristics. It has also been shown that generalized responding occurs with other behaviors such as instruction-following (Peterson, 1968; Martin, 1971) .

Recent research has focused on identification of the variables responsible for the nondifferential responding which is characteristic of generalized imitation. Present evidence suggests that generalized imitation is influenced by the particular discrimination procedures used (Bandura and Barab, 1971; Bufford, 1971; Peterson, 1968; Steinman, 1970a, 1970b; Steinman and Boyce, 1971), the social context in which imitative behavior is performed (Peterson, Merwin, Moyer, and Whitehurst, 1971; Peterson and Whitehurst, 1971; Steinman, 1971; Waxler, and Yarrow, 1970), and instructions provided to the child (Bufford, 1971; Burgess, Burgess, and Esveldt, 1970; Martin, 1971, 1972; Steinman, 1970a, 1970b, 1971; Wilcox, Meddock, and Steinman, 1973). Task difficulty (Bucher and Okovits, 1976) and availability of an alternative reinforced response (Bufford and Buchman, 1974) also affect generalized responding. Apparently, generalized imitation is not a simple discrimination learning deficit, as has been suggested by Bandura and his

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colleagues (Bandura, 1968, 1969; Bandura and Barab, 1971).

Subtle but extremely powerful social and instructional influences function to establish and maintain the nondifferential imitation typically observed. The children may clearly recognize contingencies associated with various responses, yet imitate all responses modeled (cf. Steinman, 1971). Learning explicit contingencies associated with each response modeled may be necessary but is not sufficient to produce differential imitation.

Children bring to the experiment long histories of reinforcement associated with following adult instructions, or, perhaps more commonly, punishment for failure to comply. Continued performance in the absence of apparent reinforcement is a characteristic of aversive schedules (Bijou and Baer, 1971). In order to demonstrate discriminative imitation under the discrete-trials procedure generally employed in generalized imitation research the child must "hold back" some responses. It may be more aversive for a child to disobey an adult's instructions than it is to perform when not reinforced; thus in the presence of instructions to imitate the discrete-trials procedure may produce imitative behavior even when the child knows that no reinforcers are forthcoming.

The present research consists of a series of three experiments designed to explore the role of explicit and implicit instructions, and the effects of specific behavioral histories, on disposition to imitate in the absence of reinforcement. Further support is provided for a social control analysis of generalized imitation.

EXPERIMENT I

The first experiment examines the role of verbal instructions in generalized imitation. As noted earlier, in many investigations of generalized imitation verbal instructions are repeated before modeling each response; in others overt instructions are given only in the early stages of the experiment. Experiment I compares the effectiveness of these two instructional (or priming) procedures.

Eight first grade girls served as subjects. Only two responses were modeled throughout the experiment: imitation of one response (SD response) was consistently reinforced, and imitation of the second response (S-delta response) was never reinforced. A token reinforcement system was used, with a specified number of tokens required for the child to earn a toy of her choice.

Each of the two responses was modeled fifteen times during each session in a randomized sequence, with a ten second intertrial

interval.

At the beginning of the first session, and only in the first session, two training responses, which differed from the experimental responses, were modeled. For four children the instruction "Do this" preceded modeling of each of the two initial responses but was never repeated thereafter (*i.e.*, "Do this" never preceded experimental responses). For the remaining children the "Do this" instruction was repeated prior to modeling of each response throughout the study.

The conditions described above remain in effect for the first ten sessions. Results of these procedures can be seen in Figure 1. Unfortunately, Subject 8 was no longer available after session

Insert Figure 1 about here

six. As can be seen, none of the eight children developed discriminative imitation. Imitation of both SD and S-delta responses occurred almost every time they were modeled throughout the ten sessions, regardless of whether "Do this" instructions preceded each response or not.

Peer observation

During sessions 11, 15, and 18 an additional instructional

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manipulation was introduced. A second experimenter brought the child from her classroom to a room adjacent to the usual experimental room. The child was told that the regular experimenter was busy with another child right now but that she could watch the second child and experimenter through a window until the experimenter was ready for her. The second experimenter remained and watched along with the subject. Four children observed a confederate child performing nondifferentially on the same two responses used with the observing child. The remaining three children observed a confederate who imitated the same SD response used by the observing child but did not imitate the S-delta response. After fourteen trials the confederate child exchanged her tokens, received her prize and the subject began her session.

The effect of observing a peer's performance is shown in the second segment of each graph in Figure 1 (sessions 11-20). Observing the performance of a peer model did not materially effect the subjects' performance; even for the three children who observed a model who performed differentially.

Peer observation with descriptive commentary

In a third set of manipulations each child again observed a confederate's performance before performing herself; but in addition, the experimenter seated with the child during the observa-

tion period added a commentary describing the confederate's behavior. For example, the experimenter would say "She did that one, and she got a token." Or, "She didn't do that one." After observing the confederate the subject again performed in her usual session.

Results of this manipulation is shown in the third segment of Figure 1 (sessions 21-24). As can be seen, the commentary which attempted to focus attention of the subject on the confederate's behavior and its consequences, had little or no effect on subjects' performance.

Peer observation with "supposed to" commentary

A final manipulation involved a commentary regarding what the confederate was "supposed to do" while the subject observed the confederate. For example, the experimenter said "Good, she did that one; she is supposed to." Or "Oh no, she did that one; she is not supposed to." Following the observation the subject performed in her session as usual. Results of the observation and "supposed to" commentary procedures are presented in the last segment of Figure 1 (sessions 25-34). Five of the children clearly continued to imitate both responses indiscriminately even after the strong instructional prime regarding what the confederate was "supposed to do." Only Subjects 2's performance markedly changed.

By the end of the experiment Subject-2 had developed consistent differential imitation.

EXPERIMENT II

The results of Experiment I demonstrated that there were no significant differences in frequency of generalized imitation whether verbal instructions were used repeatedly throughout the experiment or occurred only at the outset of the first session. Furthermore, it was found that once generalized imitation had been established it was remarkably resistant to the effects of observing a confederate child and verbal prompts suggesting that differential performance was desired. Consequently a second experiment was designed to determine whether generalized imitation would occur in the complete absence of verbal instructions.

In Experiment II four girls from another first grade class were given the opportunity to observe a child confederate who performed imitatively. The experimenter first modeled one or two responses while facing the confederate, who had been previously trained to imitate; he then faced the subject and modeled one or two responses. This procedure continued until each child had imitated twenty responses. The session was then ended. During the first session each imitation response of either child was reinforced with a token.

After the initial session the subject performed in the absence of the confederate. A new set of ten SD and five S-delta responses were employed. Each response was modeled three times during the session in a randomized sequence (45 responses per session).

Results are summarized in Figure 2. All four subjects

Insert Figure 2 about here

showed generalized imitation, imitating virtually all responses regardless of reinforcement during the first twelve sessions. Although no verbal instructions were given, generalized imitation was established and maintained.

Before the thirteenth session all four children observed a confederate who performed only SD responses, much as in the previous experiment. As in Experiment I, observing a peer who did not imitate S-delta responses did not affect the subsequent behavior of the subjects. All four children continued to imitate nondifferentially throughout the balance of the experiment.

In the final session (session 22), the children were given a recognition test to determine whether they could report the contingencies associated with the fifteen responses being modeled.

This response was modeled once in a randomized sequence and the child was instructed to tell the experimenter whether the particular response modeled had been reinforced or not when the child imitated it. Subjects 1 and 4 correctly identified contingencies associated with all 15 responses; Subject 2 correctly identified 14; and Subject 3 correctly identified 12. Following the recognition test standard imitation procedures were again conducted. As previously, all four children continued to imitate every response modeled.

EXPERIMENT III

The above experiments demonstrate that verbal instructions are not necessary to establish generalized imitation. Further, generalized imitation occurred even though the children could clearly identify the consequences associated with the various responses modeled. The ineffectiveness of observing a differentially performing peer model, however, was puzzling. If observing a differentially performing model functions as a nonverbal instruction, one would expect that observing a confederate perform discriminatively should change the children's behavior; however, it did not. Consequently, a factorial experiment was designed to assess the effects of confederate performance.

In a 2 X 2 X 2 factorial experiment, 56 children were

assigned to one of eight experimental groups. The three factors were: (1) the confederates either imitated the experimenter differentially or indifferentially (i.e., generalized); (2) responses modeled for the confederate were the same two as for the child, or were different than responses modeled for the child, (3) the confederates either were differentially reinforced for imitative behavior or received no reinforcement (see Table 1).

Insert Table 1 about here

Each child participated in two experimental sessions in which he was differentially reinforced for imitating one of two responses modeled. As in Experiment II, no verbal instructions were given to the subjects. In each of the two experimental sessions, the experimenter first turned to face the confederate and modeled for two trials. The experimenter then turned toward the subject and modeled two trials (one SD and one S-delta). Pairs of trials were alternated in this manner until both confederate and child had received thirty trials in a session. Four female graduate students served as confederates and experimenters.

Results for the 28 children in the four groups performing with a generalizing confederate indicate no differential

imitative behavior for any of these twenty eight children either within or between sessions.

In the four groups performing in the presence of a differentiating confederate, the degree of differential imitation exhibited by the child closely paralleled the similarity between conditions for the confederate and the child. In Group 1, for example, responses for the child were identical with those for the confederate and the confederate was also differentially reinforced; in this condition six of the seven children developed nearly complete differential imitation. By contrast, none of the children in Group 4, in which the confederate's responses differed from the child's and the confederate was not reinforced, demonstrated differential imitation. In Group 2, two children developed differential imitation; two children in Group 3 showed indications of a trend in that direction.

An analysis of variance indicated that S-delta imitation was significantly less frequent in the presence of a discriminating model ($F_{1,48} = 13.30, p = .001$), and significantly less frequent if the confederate received the same responses modeled for the child ($F_{1,48} = 12.89; p = .001$); the interaction between these factors was also significant ($F_{1,48} = 15.03, p = .001$).

Presence/absence of reinforcement to the confederate (vicarious reinforcement) did not significantly influence imitation alone ($F_{1,48} = 3.07, p. = .09$), but reinforcement to the confederate interacted significantly with the confederate's demonstration of discriminated/generalized imitation ($F_{1,48} = 4.64, p. = .04$).

These results indicate that simply observing differential imitation, per se, did not produce differential imitation in the observing child. Similarly, observing the reinforcement contingencies to the model (vicarious reinforcement) did not effect the subject's performance unless the confederate also performed differentially.

At the end of the second experimental session all 56 children were given a recognition test, as in Experiment II. Apparently eight children did not understand the instruction; in any case they refused to answer on any of the ten trials. Of the remaining 48 children, 23 correctly identified the contingencies on all 10 trials; of these 23, 13 had been imitating nondifferentially throughout the two sessions. This again suggests that being able to discriminate contingencies may be necessary but is not sufficient for differential imitation.

DISCUSSION

Taken together, the results of these experiments strongly suggest that generalized imitation, as investigated under the common discrete-trial procedures, is largely a function of the particular priming procedures (or instructions) used to generate imitation. It is not necessary that the child receive explicit verbal instructions in order to produce generalized imitation. Indeed, much more subtle instructional procedures produced the same effect. Generalized imitation appears to be the typical response of children to these procedures, regardless of differential reinforcement, unless clear verbal, observational, or procedural instructions are provided at the outset to indicate that the child should do otherwise.

Other research suggests that the influences of the social conditions which account for procedurally nonreinforced imitation in the present experiments are not restricted to imitation. Martin (1971, 1972), Peterson (1968), and Wilcox, *et al.* (1973), have shown that the same kind of generalized performance takes place with nonimitative behaviors.

As has been proposed elsewhere (Steinman, 1970a,b; 1971), perhaps the best way to conceptualize the generalized imitation situation is as one in which two contingency systems operate

simultaneously. The first involves the explicit reinforcement-extinction contingencies manipulated by the experimenter. The second contingency system is less explicitly manipulated within the experimental setting, and derives from the child's history of reinforcement and punishment for responding or failing to respond to adult social demands.

In conclusion, five factors have been shown to influence the probability of generalized responding: (1) situational demands communicated by means of verbal instructions, or pre-experimental histories; (Bufford, 1974; Martin, 1971, 1972; Steinman, 1970a,b); (2) social characteristics of the experimenters (Bandura, 1969; Hill, 1972; Redd, 1974); (3) degree of social control present when the subject performs, including presence/absence of the experimenter (Peterson, *et. al.*, 1971); (4) explicit reinforcement/punishment system including availability of alternative reinforced behaviors (Bufford and Buchanan, 1974), and task difficulty (Bucher and Okovita, note I).

Reference Note

1. Bucher, B. and Okovita, H. Effects of differential reinforcement and task difficulty on preschooler's compliance with teacher instructions. Unpublished manuscript, 1976.

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Footnotes

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Differentiating Confederate		Generalizing Confederate			
Same	Different	Confederate's Responses		Different	
		Same	Different		
Yes	No	Confederate Reinforced		Yes	No
		Yes	No		
		Groups			
		3	4	7	3
	2		5	6	

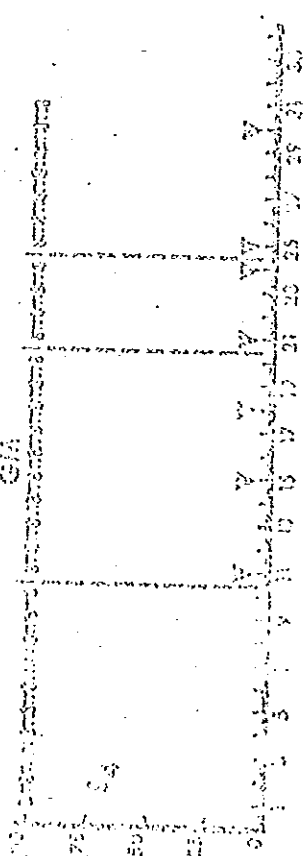
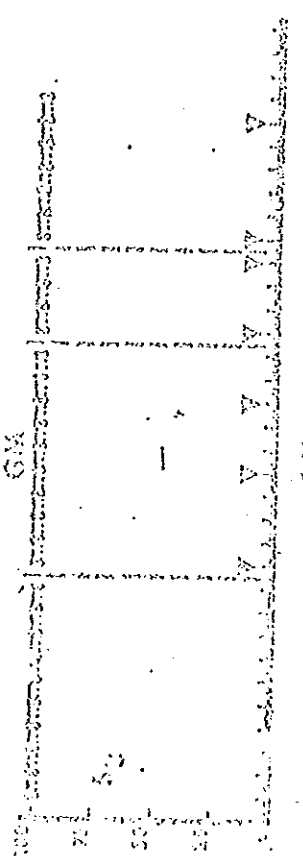
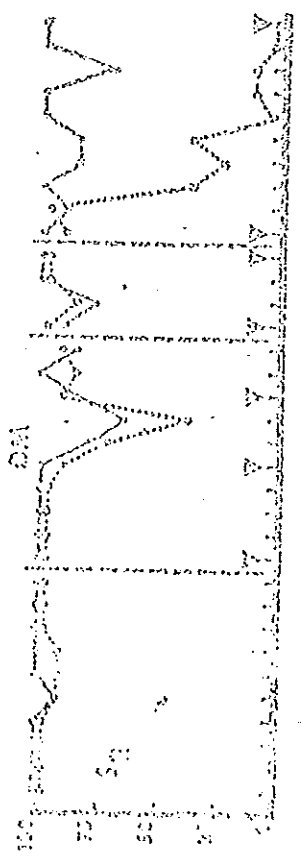
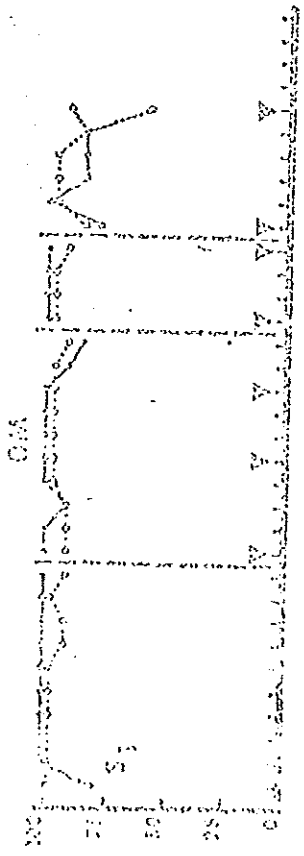
Table 1.

Figure Captions

Figure 1: Percent of reinforced (solid circles) and unreinforced (open circles) responses imitated by each subject in each session. "DM" refers to the observation of a differentially imitating confederate; "GM" refers to the observation of a nondifferentially imitating confederate. Triangles indicate sessions preceded by the observation of a confederate.

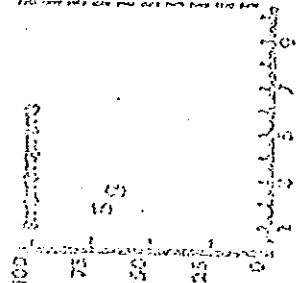
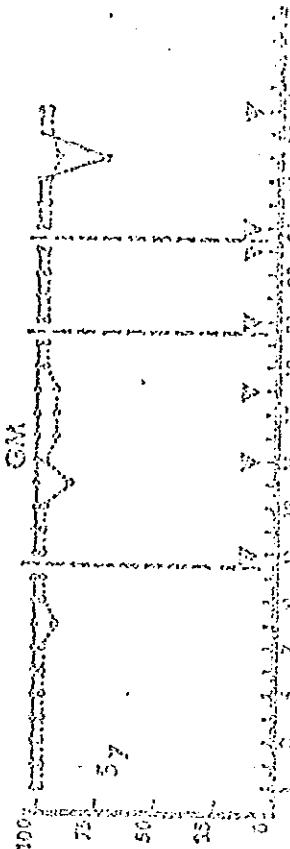
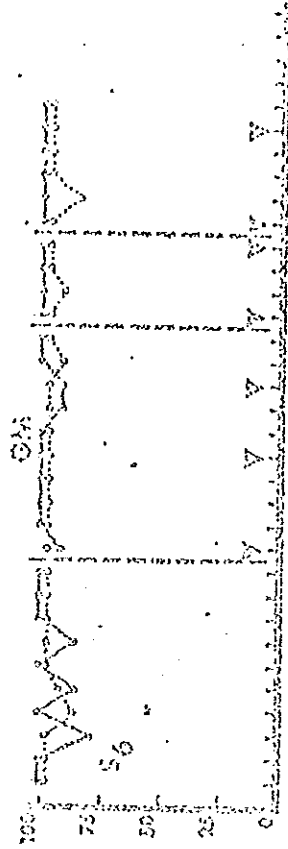
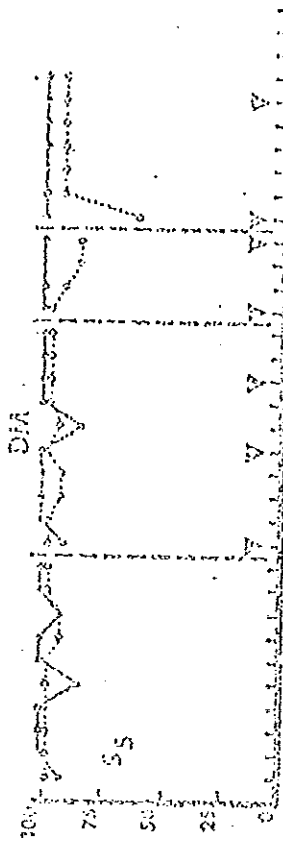
Figure 2: Percent of reinforced (solid circles) and unreinforced (open circles) responses imitated by each subject in each session. Session 13 was preceded by the observation of a differentially responding confederate. Session 22 was preceded by a contingency-recognition test.

"DO THIS" SUBJECTS



SESSIONS

NO "DO THIS" SUBJECTS



SESSIONS

- S^D RESPONSES
- - - S-DELTA RESPONSES
- GM - DIFFERENTIATING MODEL
- GM - GENERALIZING MODEL
- V - Observation of *quasi-stationary* rate

FIGURE 1

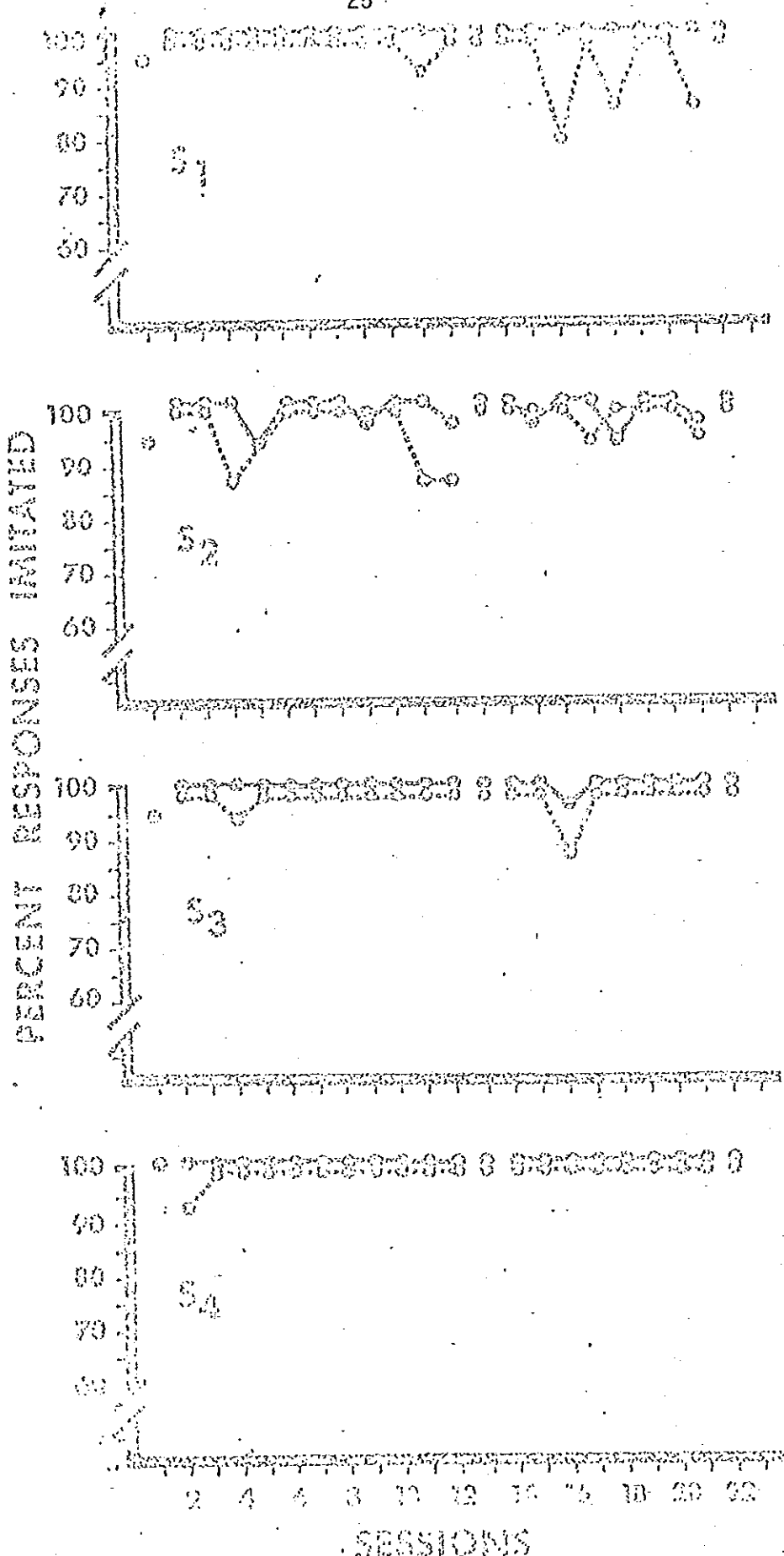


FIGURE 2