JOURNAL OF APPLIED BEHAVIOR ANALYSIS 1976, 9, 199-206 NUMBER 2 (SUMMER) 1976

EFFECTS OF TWO TEACHER-PRESENTATION RATES ON OFF-TASK BEHAVIOR, ANSWERING CORRECTLY, AND PARTICIPATION[1]

DOUGLAS W. CARNINE

UNIVERSITY OF OREGON

Off-task behavior, correct answering, and participation during beginning reading instruction were recorded for two low-achieving first-grade children during two different rates of teacher presentation. A slow-rate presentation (A) was compared with a fast-rate presentation (B) in an ABABAB design. In slow-rate presentation, there was a delay between the children's response and introduction of the next task. In fast-rate presentation, there was no delay. A new teacher taught during the final AB phases, which allowed for a brief replication. Both teachers were reminded on a fixed-interval 90-sec schedule throughout all phases of the experiment to praise the subjects, thus preventing a confounding of social praise and rate of teacher presentation. Fast-rate presentation was accompanied by a lower per cent occurrence of off-task behavior for both Subjects 1 and 2. For Subject 1, correct answering and participation were more frequent during all three fast-rate phases. For Subject 2, correct answering and participation were more frequent during the fast-rate phases after the first reversal.

DESCRIPTORS: academic behavior, presentation rate, effect on: disruptive behavior, latency of responding, children

Several techniques, which have been shown to control student behavior, are available to classroom teachers; *e.g.,* rules, extinction, and social approval (Becker, Madsen, Arnold, and Thomas, 1967), token economies (Walker and Buckley, 1974), feedback (Drabman and Lahey, 1974), and group consequences (Greenwood, Hops, Delquadri, and Guild, 1974). Other aspects of teacher behavior are also probably related to child performance. For example, in a faster-paced presentation, a teacher immediately presents a new question or demonstration after the children respond, which may result in consistent attending and correct answering on the students' part. In a slower-paced presentation, a teacher pauses or delays after the children respond while she/he reads the lesson plan and decides what to do next. During these pauses, children may misbehave and not even attend during a later instruction. If the rate of presentation is functionally related to child performance, teachers could present tasks at a suitable rate as well as use approval, extinction, tokens, group consequences, *etc.,* to increase the occurrence of appropriate school behaviors and improve academic performance.

In a presentation-rate study involving college students, Grobe, Pettibone, and Martin (1973) reported high noise levels with both slow and very fast presentation rates. They found that noise levels were lower with an intermediate presentation rate. The authors defined presentation rate according to the number of syllables spoken per minute. In the present study, presentation rate was defined by the pauses between tasks—in a fast-rate presentation the delay was 1 sec or less, and in a slow-rate presentation the delay was 5 sec or more. The study's purpose

[1]This study was supported by grant OEG-0-70-4257(286) from the United States Office of Education for the Training, Management, and Research Support for Follow Through Districts (Engelmann-Becker Model). I would like to thank Jan Spinell and Roanna Williams, who did the teaching, and William T. Fink, who supervised the data collection, for their assistance in conducting this study. I also thank Dr. Wesley Becker for his suggestions in preparing the manuscript. Reprints may be obtained from Douglas W. Carnine, Department of Special Education, University of Oregon, Eugene, Oregon 97403.

first-graders' off-task behaviors, correct answering, and participation.

METHOD

Subjects and Setting

A boy and a girl from the lowest achieving of three first-grade classrooms, were judged by the classroom teacher to be off-task "too often". They were given the Wide Range Achievement Test (Jastak and Jastak, 1965) during the second week of school. In grade-level norms, they scored second month and eighth month of kindergarten in reading and eighth month of nursery school and seventh month of prekindergarten in spelling.

The subjects and two other children comprised the lowest performing reading group, which received 30 min (9:30 a.m. to 10:00 a.m.) of reading instruction each day. The teacher sat in the rear of the classroom with a blackboard at her back. The group sat in a semicircle facing the teacher. The seating order—subject, nonsubject, subject, nonsubject—remained constant throughout the study. The other students in the classroom were working at their seats or were receiving small-group instruction in other areas of the room. Two data collectors sat to the side and in front of the subjects. Four days were spent to train the data collectors and to allow the subjects to become used to their presence.

Reading Program

The students were taught reading from the Level I Distar Program (Engelmann and Bruner, 1974). Distar Reading is taught to relatively small groups of students, as are most primary reading programs. However, the Distar Reading Program is more highly structured than other programs: component skills are taught separately and then combined to form a more complex skill. For example, after component skills for decoding regular words are taught (identify sounds, blend sounds, follow a sequence progressing from left to right, and say a sounded-out word at a normal rate), all of these skills are combined to teach children to read phonetically regular words. Distar's structure is also evidenced in the very specific instructions given to the teacher—which examples to present, what to say, how to signal all the children to respond, what answers to expect, and how often to reinforce correct answers. Frequent unison responses, another unique characteristic of the Distar Program, provide extensive verbal practice for each child. To prevent any child from lagging in responses and possibly imitating other childrens' responses, the teacher signals all the children so that they respond in unison.

Design and Teacher Training

During the A condition of the ABABAB design, the rate of presentation was slower. During the B condition, the rate of presentation was faster. The teacher during the first four phases was a special-education teacher certified to teach learning-disabled children. The teacher during the last two phases was a student teacher. Praise was consistent throughout all six phases. A preprogrammed tone from a cassette tape reminded the teacher through an earplug receiver on an FI 90-sec schedule. General praise statements such as "Good job, you're really smart today", or "That was really fine", were delivered contingently at the first opportunity after the tone sounded; *i.e.,* as soon after the tone that both subjects responded correctly to a question or were attending, the teacher praised them. The teacher corrected all academic errors by requiring the child who made the error to produce the correct response. The teacher was also allowed to acknowledge correct academic responses by saying "right", or "ok", or by nodding her head.

Before the study began, the procedure for a slow-rate presentation was described to the teacher. She was told to look at her lesson plan and silently count to five after each response from the children. She then was to present the next task exactly as specified in the Distar lesswas to measure presentation-rate effects on two

son. She was also told to praise the children only following the tone. The teacher role-played this procedure with other adults until the pauses were consistent and praise was given only after the tone. Timing checks indicated that the teacher followed the tone during each phase. At the end of the first phase, the procedure for a fast-rate presentation was described—the teacher was told to proceed immediately to the next task after each response from the children.

The student teacher observed the special-education teacher for three sessions and role-played the procedure before teaching in the final two phases. The student teacher was involved in the study because the special-education teacher took another job. The change in teachers allowed for a brief replication before the Christmas holidays. The study's purpose was not discussed with either teacher. They were told only the experimental procedures for the slow- and fast-rate presentations. Expectations about the effects of presentation rate were not discussed, nor did either teacher view the data.

Recording

Child behaviors. If a subject responded within 1 sec after the teacher's cue to answer, it was rated as Participation. If the subject answered after more than 1 sec, it was recorded as nonparticipation. (Nonparticipation was not corrected by the teacher.) Appropriate academic responses were rated as Answering Correctly, even if the response was late and had been rated as nonparticipation. A wrong or no response was rated as incorrect and was corrected by the teacher. "Off-Task" behavior was defined as the occurrence of any of the following behaviors (from Becker, Madsen, Arnold, and Thomas, 1967): Gross motor occurred when the subject's body left the seat of his/her chair to engage in an inappropriate behavior; *e.g.,* walking around, moving chair, jumping. "Blurting out" occurred when the subject engaged in inappropriate or undirected talking, crying, screaming, laughing loudly, singing, calling "teacher", or blurting out answers before the teacher signalled for a response. "Talking" occurred when the subject carried on conversations with other children in the group. "Other" occurred when the subject ignored the teacher or exhibited minor motor behavior, such as foot tapping or other behaviors judged disruptive but that were not included in the previous four categories.

Teacher behavior. The Rate of Presentation was defined by dividing the total instructional time for a session by the number of tasks presented during that session.

Recording Procedure

Although every child in the group responded to each task, Participation, Answering Correctly, and Off-Tasks were rated for only a single subject at a time. A task began when a teacher initiated an instruction, question, or demonstration from the Distar lesson and continued until she initiated the next instruction, question, or demonstration. The same tasks were not presented to both subjects; rather, each task was new. One subject was rated on all the dependent variables for 10 consecutive tasks. The second subject was rated for the next 10 consecutive tasks. The first subject was again rated for 10 consecutive tasks, and then the second subject was rated again. During most sessions, this cycle was repeated one more time, so that each subject was rated on a total of 30 tasks. For recording the Rate of Presentation, the data collectors used stopwatches to measure each 10-task block. The watches were stopped if children were individually questioned by the teacher or if there were interruptions. After each 10 tasks, the data collectors recorded the time and reset their watches. Three sessions were randomly selected in which the data collectors were separated, without being notified in advance. Since reliabilities were not adversely affected, observer contamination was assumed to be minimal.

Reliability

Reliability on the three dependent measures was calculated by dividing the total number of

Table 1

Percentages of Agreement for Subjects 1 and 2 on the Three Dependent Measures

Behaviors	*Total Number of Checks*	*Mean Percentage of Agreement*	*Modal Percentage of Agreement*	*Range of Percentages*
Subject 1				
Off-Task	34	90.2	90.0	60.0-100.0
Answering Correctly	34	90.6	95.0	70.0-100.0
Participation	34	90.5	100.0	83.0-100.0
Subject 2				
Off-Task	35	91.3	100.0	66.7-100.0
Answering Correctly	35	92.9	100.0	83.0-100.0
Participation	35	91.8	100.0	73.3-100.0

agreements by the number of agreements plus disagreements and multiplying by 100. A Pearson-*r* was calculated on the time measures as an indication of reliability for Rate of Presentation. Reliability checks were made on 87% of the sessions.

RESULTS

The average of the two collectors' data was used to report the per cent occurrence for both the subjects' behaviors and for the Rate of Presentation. Reliability parameters are reported in Table 1. For Subject 1, the average reliability was 90.5% for Participation, 90.6% for Answering Correctly, and 90.2% for Off-Task. For Subject 2, the average reliability was 91.8% for Participation, 92.9% for Answering Correctly, and 91.3% for Off-Task. The Pearson-*r* for the time measures was 0.92.

Figure 1 shows the Rate of Presentation in terms of the number of seconds per task for

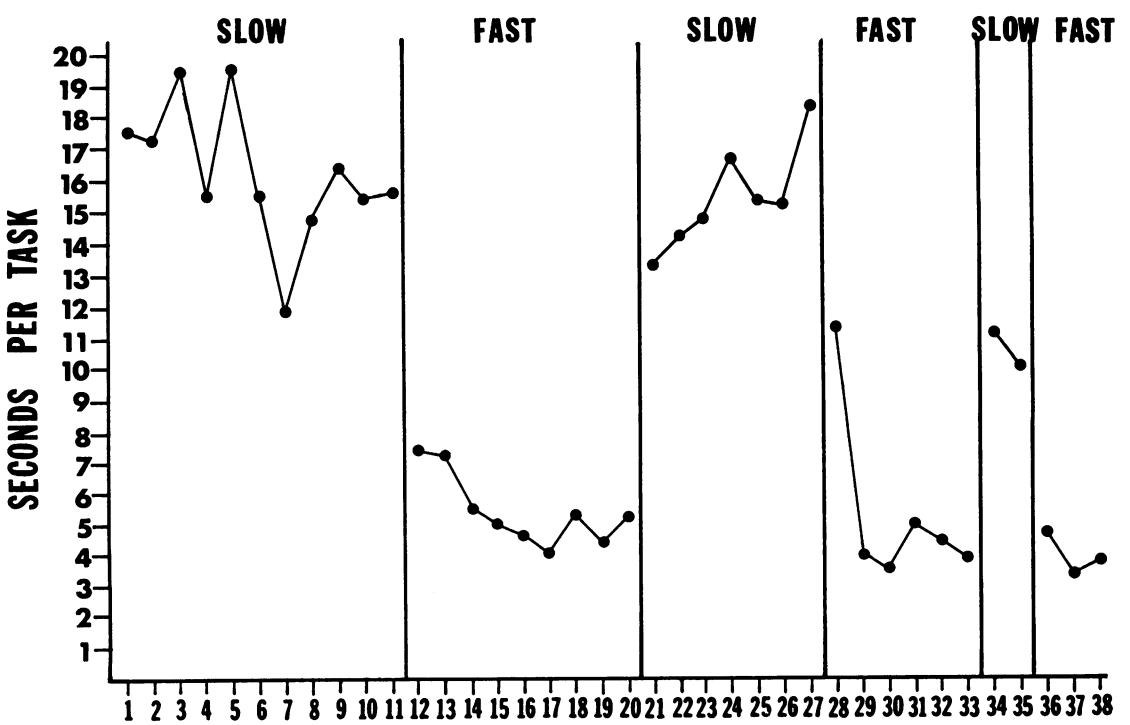

Fig. 1. Average task duration in seconds for each session of the slow- and fast-rate presentation phases. The student teacher taught during the final two phases (Sessions 34 through 38).

each session. The mean number of seconds per task for the three fast-rate phases was 5.0; the mean number of seconds per task for the slow-rate phases was 14.2. More specifically, the slow-rate condition means were 16.2 for Phase 1, 15.4 for Phase 3, and 10.1 for Phase 5. The fast-rate condition means were 5.4 for Phase 2, 5.7 for Phase 4, and 3.9 for Phase 6.

Figure 2 shows the per cent occurrence of Off-Task, Answering Correctly, and Participation for Subject 1 during the slow-rate and fast-rate presentation phases. The means for Off-Task during the slow-rate condition were 52.6% for Phase 1, 81.3% for Phase 3, and 75.3% for Phase 5. The means for Off-Task during the fast-rate condition were 13.9% for Phase 2, 8.7% for Phase 4, and 4.5% for Phase 6. The means for Correct Answering were 28.9%, 28.9%, and 26.6% for the slow-rate phases and 89.2%, 76.3%, and 76.0% for the fast-rate phases. The means for Participation were 25.8%, 38.8%, and 29.1% for the slow-rate phases and 75.4%, 76.4%, and 79.3% for the fast-rate phases.

At the beginning of the study, Subject 2's Off-Task behavior (see Figure 3) was comparable to that of Subject 1 (46.3% as compared with 52.6%). However, the mean per cent occurrence of Answering Correctly and Participation was substantially higher for Subject 2 (87.0 and 83.1). Consequently, the shift to a fast-rate presentation affected only Off-Task behavior, which decreased from 46.3% to 6.6%. When a reversal to a slow-rate presentation was made, all three dependent variables were affected. Off-Task increased from 6.6% to 70.0%, Answering Correctly fell from 91.7% to 56.5%, and Participation fell from 86.5% to 58.7%.

Rate of Presentation continued to control the dependent variables for Subject 2 during the remainder of the study. With the re-instatement of a fast-rate presentation, Off-Task decreased to 7.5%, increased to 45.8% when the slow-rate was re-instated, and decreased to 3.1% in the last fast-rate phase. The mean per cent occurrence of Answering Correctly was 56.5 and 51.7 during the last two slow-rate phases (3 and 5) and 89.8 and 87.8 during the last two fast-rate phases (4 and 6). The mean per cent occurrence of Participation was 58.7 and 45.9 during the last two slow-rate phases and 90.4 and 93.9 during the last two fast-rate phases.

DISCUSSION

A rate of presentation can be established for every teacher. The present study indicated that a faster rate might decrease the occurrence of students' Off-Task behavior and increase the occurrence of Answering Correctly and Participation. The technique of more rapidly asking questions or giving instructions can be used by teachers in addition to techniques involving contingent consequences. The generalizability of presentation rate effects across teachers is indicated in that both a certified, special-education teacher and a noncertified, university student were able to use a fast-rate presentation to control the occurrence of Off-Task, Answering Correctly, and Participation.

In the present study, the faster rate resulted from less delay after the children's response. A delay before the teacher signals the children to respond may often be necessary, so that the children will have time to "figure-out" the correct response. If children are rushed into responding immediately after hearing a question, they may make more errors and not attend. Grobe, Pettibone, and Martin (1973) found that too-rapid a presentation was as detrimental to the instructional situation as was too-slow a pace.

The present study could be extended in several directions. Related to the Grobe *et al.* (1973) study, a very fast condition could be presented to primary students to determine if "thinking time" is indeed necessary to maintain frequent correct responding and minimize off-task behavior. Presentation rate effects could also be investigated with children of different ages and abilities and across various subject areas. If certain rates maximized correct re-

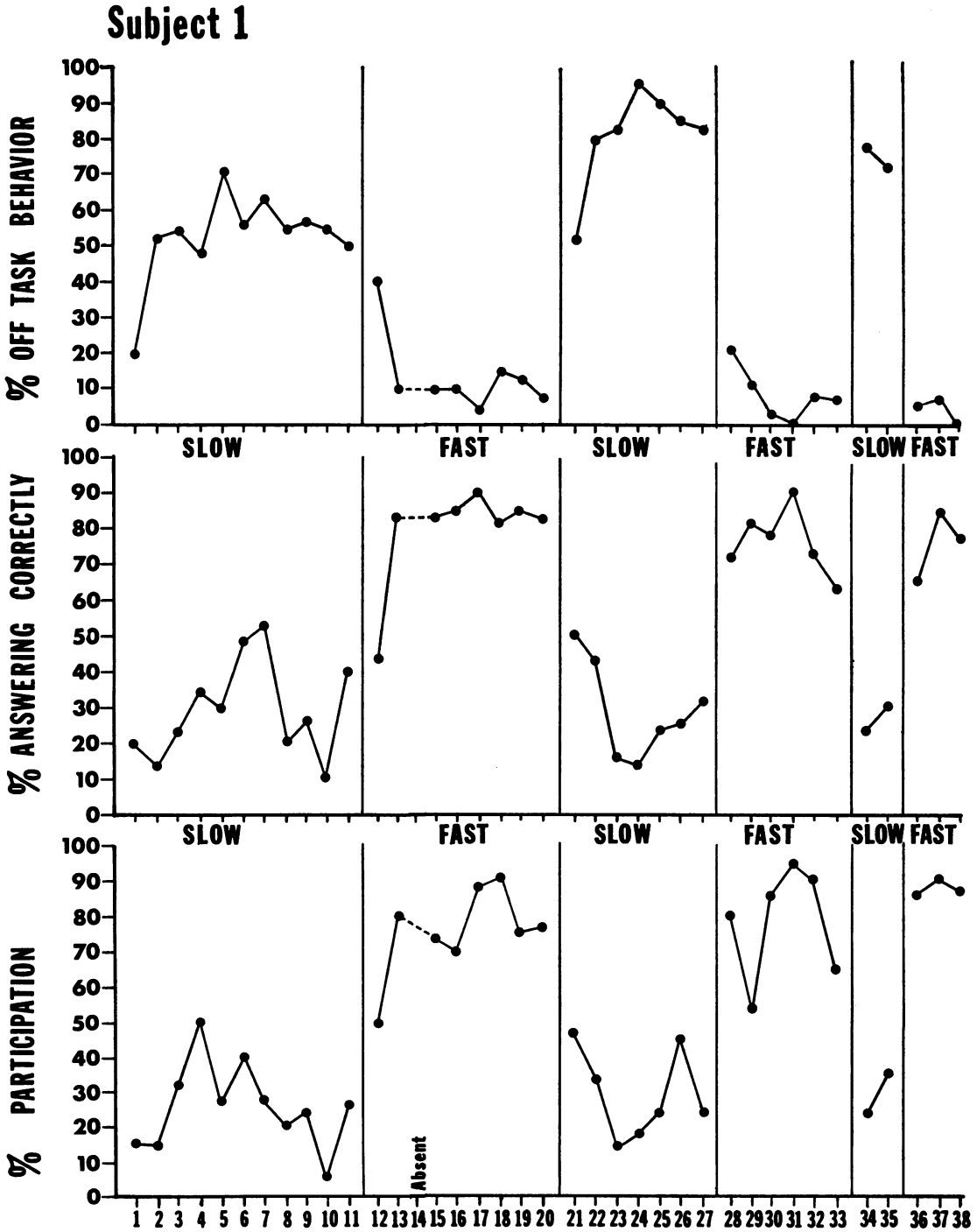

Fig. 2. Per cent occurrence of Off-Task, Answering Correctly, and Participation for Subject 1 during the slow- and fast-rate presentation phases. The dotted lines indicate when Subject 1 was absent. The student teacher taught during the final two phases (Sessions 34 through 38).

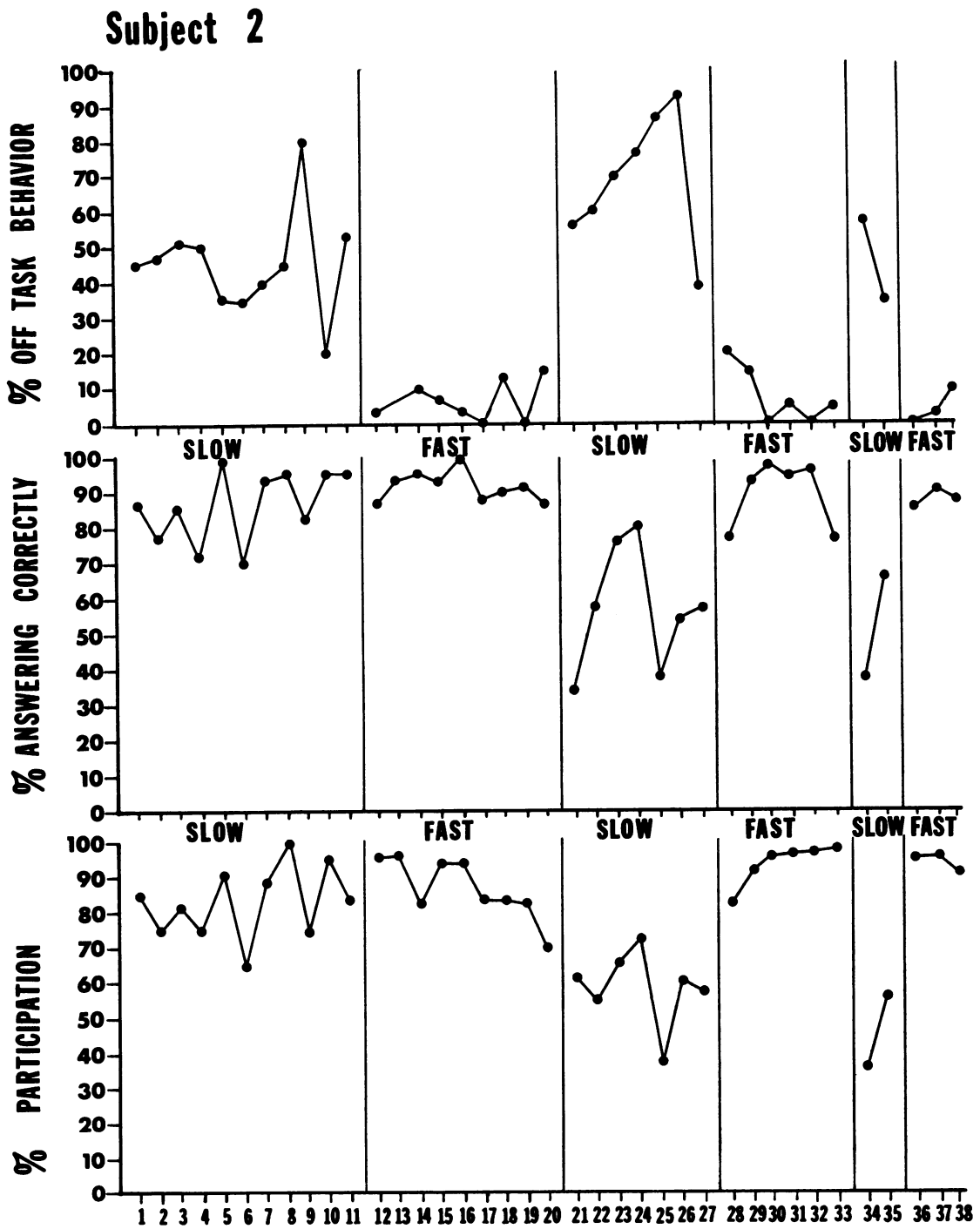

Fig. 3. Per cent occurrence of Off-Task, Answering Correctly, and Participation for Subject 2 during the slow- and fast-rate presentation phases. The dotted lines indicate when Subject 1 was absent. The student teacher taught during the final two phases (Sessions 34 through 38).

sponding and attending, those rates coud serve as teacher training objectives and one criterion in evaluating teacher performance. Establishing empirically validated teaching techniques—reinforcement, extinction, rapid pacing, *etc.*—should result in improved preservice and inservice teacher training.

Rate of Presentation is one of several techniques that we have been evaluating in order to develop a set of teaching competencies that relate to children's academic performance. A different study relates to the use of teacher cues to increase Participation, a dependent variable measured in the current study. We consider Participation to be a relevant dependent variable because it is incompatible with copying another child's verbal response. Unfortunately, there seems to be little research that has investigated the effects of copying on the acquisition of academic skills. However, to the extent that nonparticipation and possible verbal copying do interfere with academic skill acquisition, suitable presentation rates and cues to respond that increase student Participation would be useful techniques for teachers.

REFERENCES

Becker, W. C., Madsen, C. H. Jr., Arnold, C., and Thomas, D. R. The contingent use of teacher attention and praise in reducing classroom behavior problems. *Journal of Special Education,* 1967, **1,** 287-307.

Drabman, R. S. and Lahey, B. Feedback in classroom behavior modification: effects on the target and her classmates. *Journal of Applied Behavior Analysis,* 1974, **4,** 591-598.

Engelmann, S. E. and Bruner, E. C. *Distar Reading I.* Chicago: Science Research Associates, 1974.

Greenwood, C. R., Hops, H., Delquadri, J., and Guild, J. Group contingencies for group consequences in classroom management: a further analysis. *Journal of Applied Behavior Analysis,* 1974, **3,** 413-425.

Grobe, R. P., Pettibone, T. J., and Martin, D. W. Effects of lecturer pace on noise level in a university classroom. *Journal of Educational Research,* 1973, **67,** 73-75.

Jastak, J. F. and Jastak, S. R. *The Wide Range Achievement Test.* Wilmington, Delaware: Guidance Associates, 1965.

Walker, H. M. and Buckley, N. K. *Token reinforcement techniques.* Eugene, Oregon: E-B Press, 1974.

Received 17 April 1975.
(Final acceptance 10 October 1975.)