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TREATMENT OF ESCAPE-MAINTAINED ABERRANT BEHAVIOR WITH ESCAPE EXTINCTION AND PREDICTABLE ROUTINES

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We evaluated the effects of two daily activity schedules on 2 participants' rates of aberrant behavior and their compliance. Functional analysis identified the operant function of the participants' aberrant behaviors to be escape from tasks. Participants were taught to use stimuli contained in daily schedules, and were tested based on a modified stimulus-equivalence model that consisted of flash cards and activity schedules comprised of words or photographs that corresponded to the participants' daily activities. On pretests, the participants demonstrated simple and conditional discriminations with the photographs but not with the printed stimuli. A time-delay procedure was used to teach the participants to name the flash cards. Following training, the printed activity schedules corresponded to lower rates of problem behavior and higher rates of compliance than the photographic activity schedules. Performance on posttests indicated the establishment of functional classes of stimuli involving the flash cards and activity schedules even though this type of correspondence was not directly trained.

DESCRIPTORS: escape-maintained aberrant behavior, escape extinction, functional analysis, predictability, stimulus equivalence

As discussed by Iwata (1987), several distinct interventions have successfully treated escape-maintained aberrant behavior, including (a) escape extinction (Iwata, Pace, Kalsher, Cowdery, & Cataldo, 1990; Mace, Browder, & Lin, 1987; Repp, Felce, & Barton, 1988), (b) combining escape extinction with instructional fading (Pace, Iwata, Cowdery, Andree, & McIntyre, 1993; Zarcone et al., 1993), (c) providing preferred stimuli contingent on task performance (Carr, Newsom, & Binkoff, 1980; Gaylord-Ross, Weeks, & Lipner, 1980; Steege, Wacker, Berg, Cigrand, & Cooper, 1989), and (d) providing assistance or escape from the task contingent on a functionally equivalent response (Carr & Durand, 1985). Escape extinction weakens the response–reinforcer relation by discontinuing the contingent removal of an aversive stimulus (i.e., task demand) (Iwata et al., 1990). Instructional fading weakens the response–reinforcer relation because task reduction is independent of the occurrence of aberrant behavior (Pace et al., 1993). Providing preferred stimuli contingent on task-related behavior lessens the aversiveness of the demand situation by increasing the motivation for participation (Steege et al., 1989). A functional equivalence approach provides the same reinforcer produced by the aberrant behavior for an alternative response (i.e., a request for assistance or a break from the task) (Carr & Durand, 1985).

A less frequently used method to decrease the aversiveness of a task situation is to provide the individual with information regarding the task. The information can be visual cues that show task sequence (Connis, 1979), the assigned activities (MacDuff, Krantz, & McClannahan, 1993; Sowers, Rusch, Connis, & Cummings, 1980), or the steps within a specific activity (Frank, Wacker, Berg, & McMahon, 1985). Flannery and Horner (1994) evaluated the effectiveness of "predictability signals" on the rates of escape behaviors for 2 participants with moderate to severe mental retar-

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dation and autism. The authors provided the participants with information regarding task sequence, duration, and content, and the consequences for task performance to reduce aberrant behaviors. Flannery and Horner hypothesized that the information allowed the participants to better predict upcoming activities and, thus, lessened the aversiveness of these situations.

The goal of the present study was to evaluate the effects of escape extinction and daily activity schedules on aberrant behavior and compliance. Participants resided in a group home where they performed a variety of daily activities. We hypothesized that teaching the participants to follow daily activity schedules might reduce rates of aberrant behavior and increase compliance by providing them with predictable routines. In addition, we placed aberrant behavior on an extinction schedule to weaken the response–reinforcer relation.

METHOD

Participants

James and John were 18 years old with diagnoses of mild mental retardation. Both participants had resided in group homes prior to separate admissions to an inpatient hospital unit specializing in the treatment of severe behavior disorders. James and John completed personal care routines and activities of daily living with minimal prompts and interacted with others using four- to five-word sentences.

Both participants engaged in severe aggressive and disruptive behaviors, which often resulted in physical injury to staff (James) and extensive property destruction (James and John). Previous treatments included picture activity schedules, token systems, redirection to preferred activities, and various medications (e.g., clonidine, haloperidol, Ritalin®). James received 3 mg of haloperidol three times per day throughout the course of this study.

Training Materials

All printed and photographic stimuli corresponded to participants' activities of daily living (e.g., shower, lunch). Activities that the participants independently completed and that occurred on a daily basis in their community environments were selected. We trained and tested for 16 equivalence classes, each consisting of a dictated activity name (A stimulus), an activity depicted in a photograph (B stimulus), a printed word on a flash card (C stimulus), and a printed word on an activity schedule (C′ stimulus).

Words on flash cards were printed in uppercase letters (approximately 2 cm by 2 cm) on a white index card (7.5 cm by 12.5 cm). Words on the printed activity schedule were printed in uppercase letters (approximately 2 cm by 2 cm) on a white sheet of paper (21 cm by 27.5 cm). Photographic stimuli were color photographs (10 cm by 10 cm) of a participant engaged in an activity.

Experimental Design

Participants' aberrant behaviors were initially assessed via functional analysis (Iwata, Dorsey, Slifer, Bauman, & Richman, 1982). A series of analogue conditions were presented during 15-min sessions in a randomized multielement design.

For stimulus equivalence training and testing, a pretest-train-posttest sequence was implemented for each participant (Cowley, Green, & Braunling-McMorrow, 1992; Sidman, 1971). Pretesting was conducted to identify the relations present prior to training and the relations requiring training. We used a reversal design (ABAB) for James with an independent replication (AB) for John to evaluate the relative effects of the photographic and printed activity schedules on aberrant behavior and compliance to the schedules.

Procedure

All sessions were conducted in a dormitory-style room (4.5 m by 6 m) that served as the participants' living quarters during their hospital admission. The room was equipped with a full bathroom, a two-seat sofa, a table (180 cm long), and three to five chairs. An experimenter, a participant, and a second observer were present during the sessions.

Functional analysis of aberrant behavior. The

functional analysis consisted of attention, escape, tangible item, and control conditions, similar to those in Iwata et al. (1982). Aberrant behavior consisted of aggression (hitting, kicking, biting, or throwing objects at others) and disruption (throwing objects, ripping paper or books, hitting walls or furniture with objects). Data were collected using Zenith® Minisport lap-top computers. The Observe program (Repp, Harman, Felce, VanAcker, & Karsh, 1989) was used to record the frequency of target behaviors. A second observer recorded data for the purpose of interobserver agreement on an average of 32% of the sessions equally distributed across participants and conditions. The Reliable program (Repp et al., 1989) was used to calculate interobserver agreement. Occurrence agreement was scored when two observers recorded the onset of the target behavior within ±5 s of each other. Occurrence agreement was 88% for James and 91% for John.

General Training Procedure

Table-top match-to-sample procedures were used for stimulus equivalence testing and training. Testing or training was conducted daily, with multiple sessions separated by a minimum of 30 min. Sessions generally lasted 15 to 20 min. The participants earned tokens for their participation. Samples were either visual stimuli or activity names dictated by the experimenter. Comparisons were always three visual stimuli, except when the participant was required to point to a word or photo on the activity schedule. Match-to-sample and oral naming sessions consisted of three trials each of 16 samples for a given set of stimuli (a total of 48 trials per session). The order of sample stimuli and position of correct comparison stimuli varied across trials. The trained or tested conditional relations were determined daily. Two comprehension tests (30 min each) were conducted daily (during pre- and posttesting) with tests separated by a minimum of 4 hr.

For the match-to-sample sessions the experimenter stated, "John, look at the word [or photograph]" (experimenter pointed to sample). "Point to the word [or photograph] that matches it" (experimenter pointed to the comparison stimuli). For example, an AB set included three trials each of the A1B1, A2B2, A3B3, . . ., A16B16 relations (i.e., A1, . . ., A16 were presented as samples on three trials, with two stimuli from B1, . . ., B16 selected as comparisons on each trial). For the oral naming trials, the experimenter stated, "John, look at the card [or photograph]. What word [or photograph] is this?"

Comprehension tests consisted of 16 trials (one trial per sample) with either the B, C, or C′ stimulus. The experimenter stated, "John, look at the [B, C, or C′ stimulus, as he or she pointed to the sample] and show me what you have to do." The intertrial interval was 30 s. The order of activities (i.e., the 16 stimuli) was randomly scheduled for each test to avoid responding to sequence cues (i.e., activities in the same order). The experimenter provided praise for correct responses during all phases of the study.

Pretests and Posttests

The order of conditions and relations trained or tested is summarized in Table 1. Pretesting was conducted to evaluate all possible relations among stimuli, and training was then conducted to establish specific relations. Following training, we tested for the properties of equivalence. There were three pre- and posttests conducted for each relation, except for the comprehension posttests (five posttests). Posttests were conducted after the completion of oral naming training.

Reflexivity tests involved the B, C, or C′ stimulus and evaluated the participants' levels of generalized identity matching. Symmetry tests involved all experimental stimuli, evaluated the participants' pre- and posttest performances on these relations, and identified the relations for training. Transitivity tests were conducted with all stimuli to evaluate the participants' pre- and posttest performances on these relations, and partially test for equivalent relations among the relevant stimuli. Comprehension tests were conducted with the B, C, or C′ stimulus to evaluate the participants' "comprehension" (i.e.,

Table 1
Sequence of Experimental Conditions

Pretests			
1. Match to sample	2. Oral naming	3. Match to sample	4. Comprehension
1.1 BB	2.1 B	3.1 AC	4.1 B
1.2 CC	2.2 C	3.2 AB	4.2 C
1.3 C'C'	2.3 C'	3.3 AC'	4.3 C'
		3.4 CB, 3.5 BC	
		3.6 C'B, 3.7 BC'	
Oral naming training			
1. C			
Posttests			
1. Match to sample	2. Oral naming	3. Match to sample	4. Comprehension
1.1 BB	2.1 B	3.1 AC	4.1 B
1.2 CC	2.2 C	3.2 AB	4.2 C
1.3 C'C'	2.3 C'	3.3 AC'	4.3 C'
		3.4 CB, 3.5 BC	
		3.6 C'B, 3.7 BC'	

performance of the activity). Oral naming training consisted of teaching the participants to name the C stimulus with a constant time-delay procedure (Touchette, 1971). On the initial trial of a session for each sample, the experimenter provided the response prompt (i.e., a vocal model of the word) with no delay. The experimenter provided the response prompt with a 5-s delay for each sample's remaining two trials of that session. This delay procedure was repeated across training sessions. The experimenter provided descriptive praise for all correct responses and stated, "No, it's [correct word]" for incorrect responses. Criterion for the completion of training was 100% correct for three consecutive nontraining tests (i.e., probes). Probes were conducted after three training sessions with the C stimulus (three trials per sample during a training session).

Evaluation of the Activity Schedule

After the completion of all posttests, we evaluated the effects of photographic and printed activity schedules on participants' aberrant behavior and compliance. A typical day consisted of 16 activities scheduled in their natural order (e.g., dress after a shower, clean-up after a meal) or during the same time interval each day (e.g., all meals, activities of daily living, functional academics). Activities were scheduled at 30-min intervals between the hours of 7:00 a.m. (wake-up) and 9:00 p.m. (bedtime) (with the exception of the wake-up and bedtime routines that were completed in succession).

The printed activity schedule consisted of consecutive 30-min intervals (e.g., 7:00 to 7:30 a.m.) beginning at 7:00 a.m. and ending at 9:00 p.m., with each interval listing an activity (C' stimulus). The activities and time intervals were listed on a white sheet of paper (21 cm by 27.5 cm). Photographs were mounted on poster board (90 cm by 90 cm) with the corresponding 30-min interval listed to the left of the photograph for the photographic activity schedule.

At the beginning of each interval, the experimenter provided the statement, "John, it's [experimenter stated the time]. What is scheduled now [experimenter pointed to the word or photograph]?" The experimenter provided descriptive praise for correct naming of the activity and stated the time limit for completion of the activity (i.e., criterion for reinforcement) and the consequence for task completion. Participants were required to complete an activity, even if the time limit for rein-

forcement had been exceeded, before proceeding to the next activity (i.e., escape extinction). The experimenter responded to aggression by either blocking (i.e., using his or her forearm to deflect the blow) or by backing away from the participant. The experimenter did not respond to disruptive behavior as it occurred, but required the participant to restore the environment at the completion of the activity.

Dependent Measures and Data Collection

The dependent measure for all match-to-sample and comprehension tests was the number of correct trials per session. A correct response was defined as the participant correctly matching or naming the sample within 5 s of the experimenter's statement. For the comprehension tests, a correct response was defined as the participant gathering the materials involved in the activity within 10 s of the experimenter's statement. Correct and incorrect responses were recorded by the experimenter and a second observer on a data sheet that listed the tested relations or the 16 activities.

Dependent measures for the activity schedule evaluation were the number of problem behaviors per hour and the percentage of compliance to the scheduled activities. Compliance to an activity was defined as the participant initiating the activity within 60 s of the experimenter's statement, "What do you have to do now?" and completing the activity within the scheduled 30-min interval. The experimenter and a second observer (seated behind a one-way mirror) collected data on problem behavior using a count-within-interval (30-min) recording procedure. The dependent measure (number per hour) was calculated by dividing the total number of problem behaviors by the total number of hours that data were collected across the day. Compliance data were recorded by placing a plus or a minus next to the corresponding 30-min interval on a data sheet. Percentage of compliance was calculated by dividing the number of completed activities (within the specified time limit) by the number of scheduled activities and multiplying by 100%.

Interobserver Agreement

A second observer simultaneously but independently collected data on 30% (range, 25% to 33%) of the sessions across all phases and participants. Interobserver agreement for the trained and tested naming and match-to-sample responses and compliance to scheduled activities was determined on a trial-by-trial basis by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100%. Occurrence agreement for problem behavior was determined using an event-recording method and was calculated by dividing the smaller total by the larger total and multiplying by 100%. Mean agreement was 95%, with all values exceeding 83%.

RESULTS

Functional Analysis

James's and John's functional analyses show that problem behavior occurred most frequently during the escape conditions (Figure 1). Problem behavior occurred infrequently during the other conditions.

Evaluation of the Activity Schedule

James averaged 11.5 problem behaviors per hour and 26% compliance to scheduled activities during the photographic activity schedule conditions (top panel of Figure 2). He averaged 1.9 problem behaviors per hour and 79% compliance to scheduled activities during the printed activity schedule conditions. John averaged approximately 4.7 problem behaviors per hour and 18% compliance to scheduled activities during the photographic activity schedule condition (lower panel of Figure 2). He averaged approximately 1 problem behavior per hour and 86% compliance to scheduled activities during the printed activity schedule condition.

Pretests and Posttests

Pretest results are presented in the top panels of Figure 3. Both participants correctly matched all BB, CC, C′C′ stimuli during the pretests. Both participants responded with 0% accuracy on con-

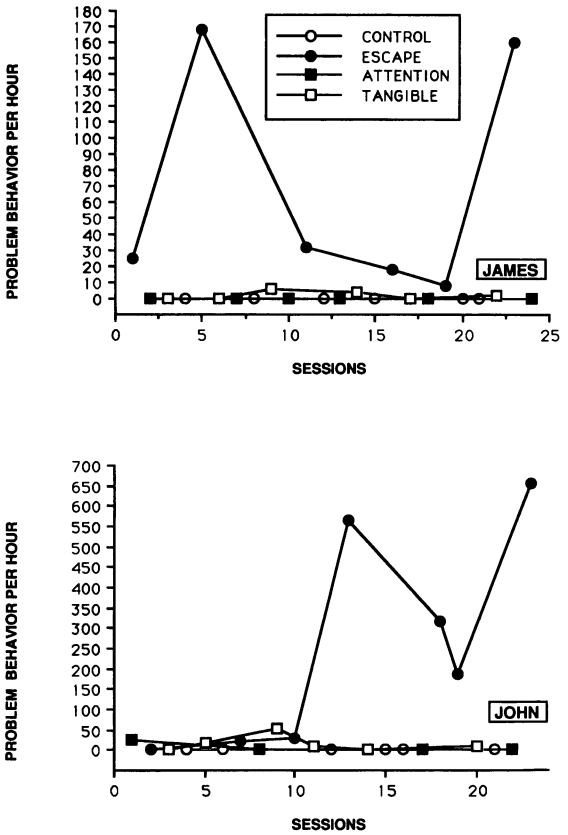

Figure 1. Results of multielement functional analyses for James (top panel) and John (bottom panel).

ditional relations involving C (AC) and C′ (AC′) stimuli and with 100% accuracy on trials presenting conditional relations involving the AB stimuli. James responded with 0% accuracy on the CB and C′B conditional relations and at 10% accuracy on the BC and BC′ conditional relations. John responded with 0% accuracy across all pretested conditional relations for BC, CB, BC′, and C′B. Oral naming pretests show that both participants responded with 100% accuracy to the B stimuli and with 0% accuracy to the C and C′ stimuli. Following the oral naming pretests, James required 15 training sessions and John required 18 training sessions to reach the criterion of three consecutive probes with 100% accuracy with the C stimuli. Comprehension tests showed that both participants responded with 100% accuracy to the B stimuli and with 0% accuracy to the C and C′ stimuli.

James and John responded with 100% accuracy on posttests for the BB, CC, C′C′ relations (lower panels of Figure 3) and for the dictated activity names (AB, AC, AC′). James averaged 100% correct and John averaged 94% correct on the CB/BC (matching flash cards to photographs and vice versa) posttests and both participants responded with 100% accuracy on the C′B/BC′ posttests (matching photographs to words on the printed activity schedule and vice versa). Oral naming posttests showed that both participants accurately named all B and C′ stimuli. Comprehension posttests showed that James correctly responded to 100% of C and B stimuli and 94% of C′ stimuli, whereas John correctly responded to 99% of C, 100% of B, and 94% of C′ stimuli.

DISCUSSION

We taught 2 participants who engaged in aberrant escape behavior to use daily schedules (photographic and printed) and placed aberrant behavior on an extinction schedule to decrease their rates of aberrant behavior and to increase their compliance. We evaluated the effects of the daily activity schedules, because recent research (Flannery & Horner, 1994) has recommended the use of predictability signals as one type of intervention for aberrant escape behavior. The printed schedule corresponded to more compliance and less problem behavior than did a photographic activity schedule. The results with the printed activity schedules support Flannery and Horner's supposition that problem behavior can sometimes be reduced when participants are able to predict upcoming events. We hypothesized that teaching the participants to follow sequenced discriminative stimuli may have re-

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Figure 2. Number of problem behaviors per hour (left vertical axes) and percentage of compliance (right vertical axes) during activity schedule evaluation for James (top panel) and John (bottom panel).

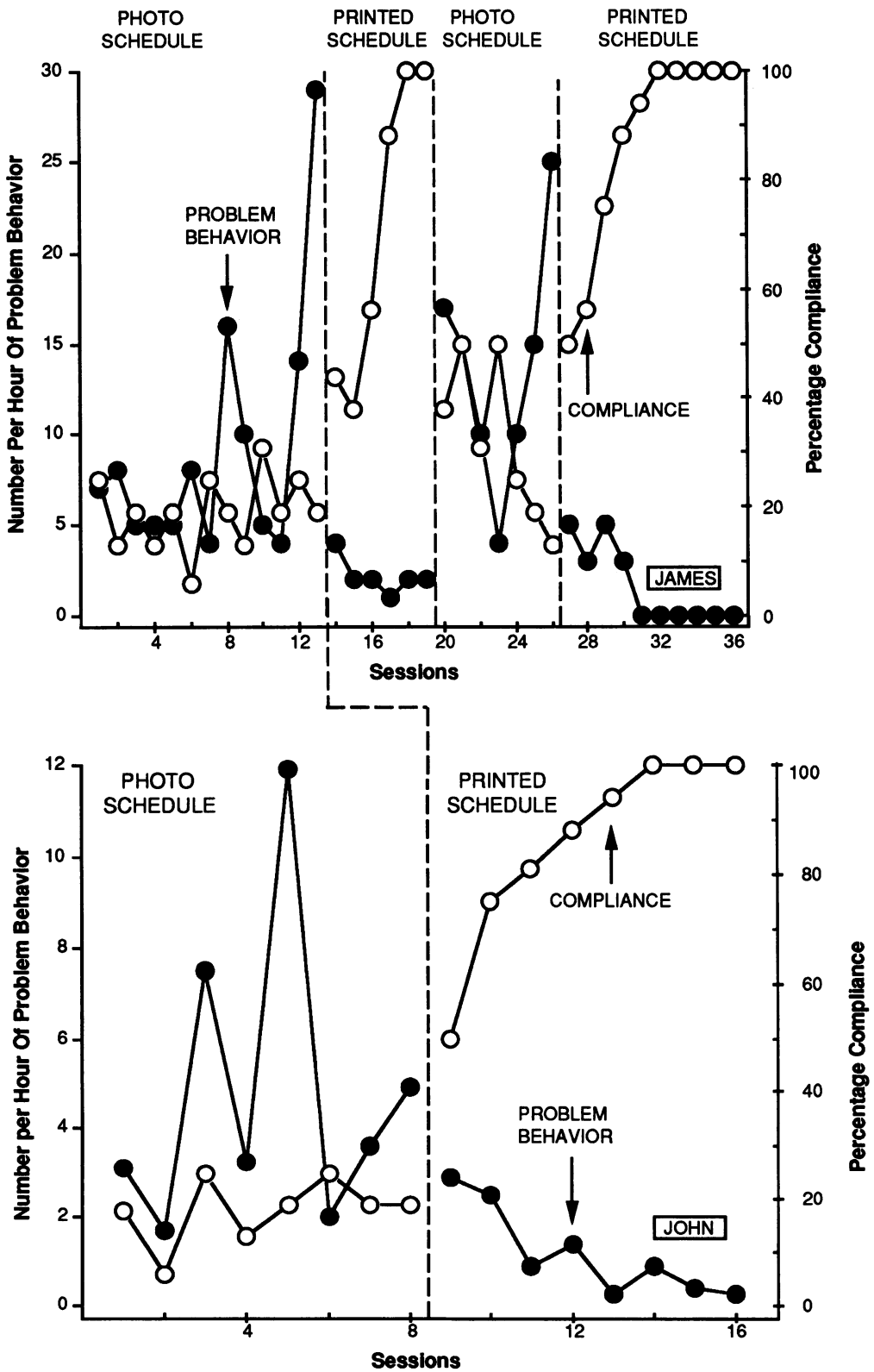
PHOTO SCHEDULE
PRINTED SCHEDULE
PHOTO SCHEDULE
PRINTED SCHEDULE
PROBLEM BEHAVIOR
COMPLIANCE
JAMES
Number Per Hour Of Problem Behavior
Percentage Compliance
Sessions
PHOTO SCHEDULE
PRINTED SCHEDULE
COMPLIANCE
PROBLEM BEHAVIOR
JOHN
Number per Hour Of Problem Behavior
Percentage Compliance
Sessions

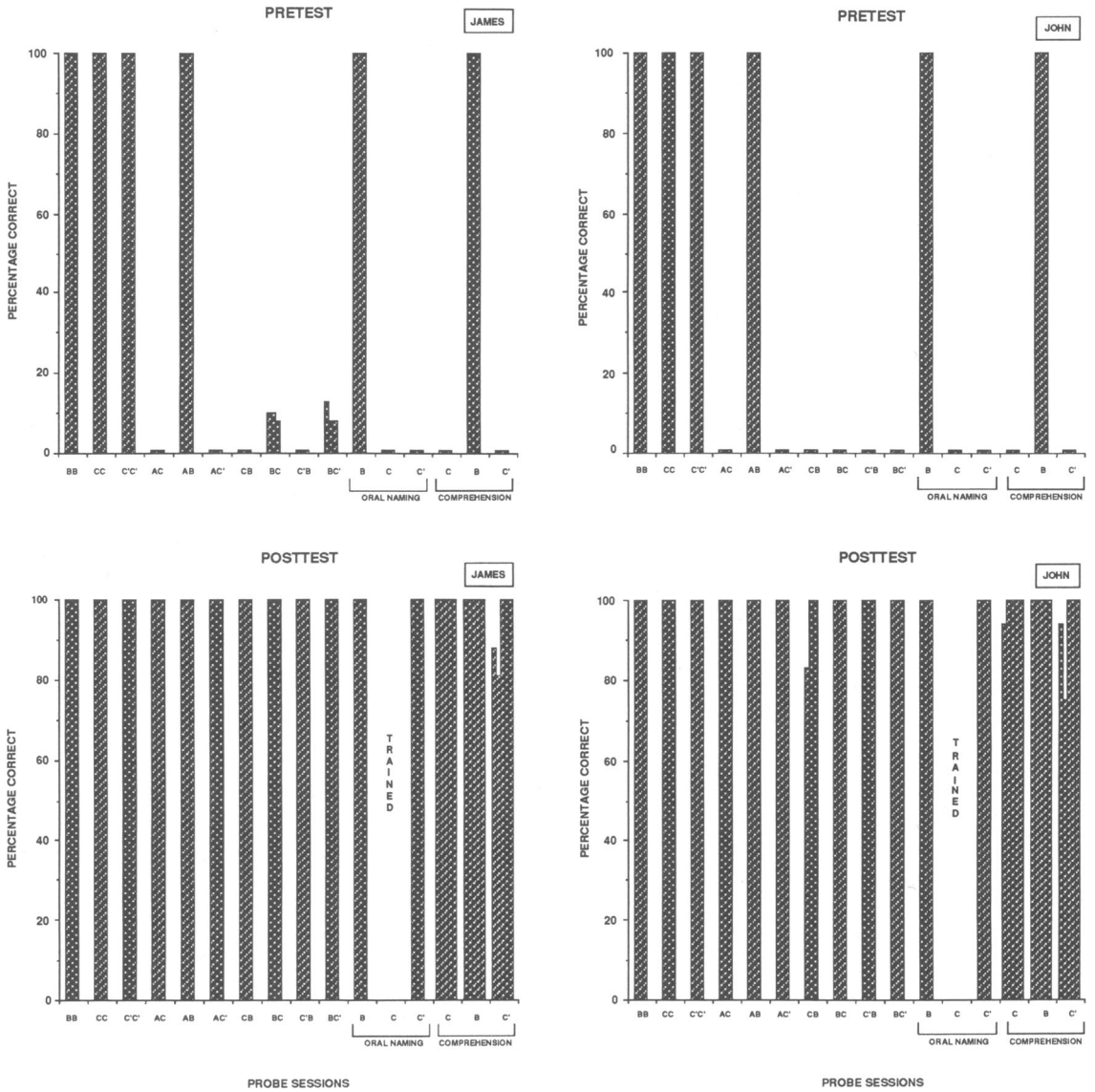

Figure 3. Percentage of correct responses on pretests (top panels) and posttests (lower panels) for James and John.

duced the aversiveness of task situations by providing them with information regarding task order, content, and duration, and the consequences for task completion. The daily schedules provided the participants with predictable routines and a predictable means to obtain reinforcement, which may have increased their motivation to comply.

There are two plausible explanations for the relative effectiveness of the activity schedules. First, the photographic and printed materials may have functioned as discriminative stimuli for different response classes. The photographs may have functioned as discriminative stimuli for problem behavior because they were correlated with situations that previously produced escape behavior in the participants' group homes. In contrast, the printed stimuli may have functioned as discriminative stimuli for compliant behavior due to their use in oral naming training, a condition that produced high rates of compliance and positive reinforcement. Sec-

ond, the differences in responding to the activity schedules may have been due to the different types of stimuli involved. The printed schedule was more age appropriate than the photographic schedule, and the participants may have preferred these stimuli rather than the photographs. Neither of these two hypotheses was tested directly.

The treatment consisted of a structured routine (activity schedule) plus escape extinction (i.e., aberrant behavior did not result in the termination of an activity). Given that previous treatments with token economies and picture activity schedules had been ineffective, the results of the current study suggest that the escape extinction component (Iwata, 1987) may have functioned as the mechanism responsible for the treatment's effectiveness. A focus for future research may be to evaluate the effects of predictability signals on aberrant behavior with and without extinction.

We attempted to demonstrate the link between basic and applied research by using modified stimulus-equivalence methods to teach the stimuli incorporated into daily activity schedules. Both participants had limited sight-word vocabularies prior to training. Based on previous research (Sidman, 1971), stimulus class formation can be an efficient teaching approach. In Sidman's study, equivalence class training and testing resulted in the addition of 80 untrained relations to the vocabulary of a 17-year-old male with severe mental retardation. In the present study, modified equivalence-class training resulted in the observation of 96 total untrained conditional relations: 16 conditional relations each involving the AC, AC′, BC, CB, BC′, and C′B stimuli. In addition, 16 simple discriminations (naming C′ stimuli) were established without training. Therefore, the development of five-member equivalence classes resulted in the establishment of six untrained relations to each directly trained relation (oral naming of 16 words). Thus, the use of the modified stimulus-equivalence method proved to be effective and efficient. A procedural difference between Sidman's study and the present study was the trained relation. Sidman taught the participant to identify dictated words by selecting the correct choice from an eight-item array (a conditional discrimination), and we trained the participants to name the sample (a simple discrimination). Therefore, equivalence was not established in the present study.

We also assessed the participants' use of newly acquired relations when they were presented with printed stimuli and were requested to perform the activity (comprehension tests). Our findings support the research by Cowley et al. (1992), who trained a participant to use equivalence relations to find and name his therapists. It is our hope that the present study stimulates further applications of laboratory findings with equivalence training to community-based problems.

REFERENCES

Carr, E. G., & Durand, V. M. (1985). Reducing behavior problems through functional communication training. *Journal of Applied Behavior Analysis, 18,* 111–126.

Carr, E. G., Newsom, C. D., & Binkoff, J. A. (1980). Escape as a factor in the aggressive behavior of two retarded children. *Journal of Applied Behavior Analysis, 13,* 101–117.

Connis, R. T. (1979). The effects of sequential pictorial cues, self-recording, and praise on the job of task sequencing of retarded adults. *Journal of Applied Behavior Analysis, 12,* 355–361.

Cowley, B. J., Green, G., & Braunling-McMorrow, D. (1992). Using stimulus equivalence procedures to teach name-face matching to adults with brain injuries. *Journal of Applied Behavior Analysis, 25,* 461–475.

Flannery, K. B., & Horner, R. H. (1994). The relationship between predictability and problem behavior for students with severe disabilities. *Journal of Behavioral Education, 4,* 157–176.

Frank, A. R., Wacker, D. P., Berg, W. K., & McMahon, C. M. (1985). Teaching selected microcomputer skills to retarded students via picture prompts. *Journal of Applied Behavior Analysis, 18,* 179–185.

Gaylord-Ross, R., Weeks, M., & Lipner, C. (1980). An analysis of antecedent, response, and consequence events in the treatment of self-injurious behavior. *Education and Training of the Mentally Retarded, 15,* 35–42.

Iwata, B. A. (1987). Negative reinforcement in applied behavior analysis: An emerging technology. *Journal of Applied Behavior Analysis, 20,* 361–378.

Iwata, B. A., Dorsey, M. F., Slifer, K. J., Bauman, K. E., & Richman, G. S. (1982). Toward a functional analysis of self-injury. *Analysis and Intervention in Developmental Disabilities, 2,* 3–20.

Iwata, B. A., Pace, G. M., Kalsher, M. J., Cowdery, G. E., & Cataldo, M. F. (1990). Experimental analysis and extinction of self-injurious escape behavior. *Journal of Applied Behavior Analysis, 23,* 11–27.

MacDuff, G. S., Krantz, P. J., & McClannahan, L. E. (1993). Teaching children with autism to use photographic activity schedules: Maintenance and generalization of complex response chains. *Journal of Applied Behavior Analysis, 26,* 89–97.

Mace, F. C., Browder, D. M., & Lin, Y. (1987). Analysis of demand conditions associated with stereotypy. *Journal of Behavior Therapy and Experimental Psychiatry, 18,* 25–31.

Pace, G. M., Iwata, B. A., Cowdery, G. E., Andree, P. J., & McIntyre, T. (1993). Stimulus (instructional) fading during extinction of self-injurious escape behavior. *Journal of Applied Behavior Analysis, 26,* 205–212.

Repp, A. C., Felce, D., & Barton, L. E. (1988). Basing the treatment of stereotypic and self-injurious behaviors on hypotheses of their causes. *Journal of Applied Behavior Analysis, 21,* 281–289.

Repp, A. C., Harman, M. L., Felce, D., VanAcker, R., & Karsh, K. L. (1989). Conducting behavioral assessments on computer collected data. *Behavioral Assessment, 2,* 249–268.

Sidman, M. (1971). Reading and auditory-visual equivalences. *Journal of Speech and Hearing Research, 14,* 5–13.

Sowers, J., Rusch, F. R., Connis, R. T., & Cummings, L. E. (1980). Teaching mentally retarded adults to time-manage in a vocational setting. *Journal of Applied Behavior Analysis, 13,* 119–128.

Steege, M. W., Wacker, D. P., Berg, W. K., Cigrand, K. K., & Cooper, L. J. (1989). The use of behavioral assessment to prescribe and evaluate treatments for severely handicapped children. *Journal of Applied Behavior Analysis, 22,* 23–33.

Touchette, P. E. (1971). Transfer of stimulus control: Measuring the moment of transfer. *Journal of the Experimental Analysis of Behavior, 15,* 347–354.

Zarcone, J. R., Iwata, B. A., Vollmer, T. R., Jagtiani, S., Smith, R. G., & Mazaleski, J. L. (1993). Extinction of self-injurious escape behavior with and without instructional fading. *Journal of Applied Behavior Analysis, 26,* 353–360.

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