THE EFFECTS OF TRAINING ON CAREGIVER IMPLEMENTATION OF INCIDENTAL TEACHING

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A brief training package consisting of modeling, rehearsal, and feedback was evaluated to train caregivers to use incidental teaching to teach 3 children with autism to request an item or activity. The training package improved correct implementation of the incidental teaching procedure by caregivers. In addition, probes indicated that caregivers could apply these skills to teach the child an additional skill.

Key words: autism, behavioral skills training, caregiver training, incidental teaching, Phelan-McDermid syndrome

Caregivers play a critical role in teaching and managing problem behavior exhibited by individuals with autism and other disabilities. Behavior analysts have taught caregivers a variety of assessment and intervention techniques that are useful with this population. These include functional analysis (Moore et al., 2002; Wallace, Doney, Mintz-Resudek, & Tarbox, 2004), discrete-trial teaching (Sarokoff & Sturmey, 2004), prompted voiding (Adkins & Mathews, 1997), and guided compliance (Miles & Wilder, 2009).

Incidental teaching is a procedure in which stimuli and events are arranged within ongoing, typical activities to motivate children to interact with people or practice a skill. During incidental teaching, the therapist increases the likelihood of child responding by contriving motivating operations in the context of specific interactions. Reinforcers are delivered immediately after each correct response. This procedure has been most frequently applied to teach language to children with autism (McGee, Krantz, Mason, & McClannahan, 1983; Schepis et al., 1982). Although behavior analysts have taught caregivers to implement variations of incidental teaching (Alpert & Kaiser, 1992; Charlop-Christy & Carpenter, 2000; Laski, Charlop, & Schreibman, 1988), more research is needed on brief training approaches. The purpose of the current study was to evaluate a brief training package to teach incidental teaching methods to caregivers of children with autism.

METHOD

Participants and Setting

Participants were Sue, who was Mike's respite-care staff member; Jack, who was Linda's father; and Liza, who was Kathy's mother. Sue was 24 years old, Jack was 41 years old, and Liza was 32 years old. All caregivers had little or no experience in applied behavior analysis. Mike, Linda, and Kathy were 8, 10, and 8 years old, respectively. All children had a diagnosis of autistic disorder and exhibited marked deficits in language (all were nonvocal), social interaction, and academic skills. In addition, Mike and Kathy had a diagnosis of severe mental retardation and Linda had a diagnosis of Phelan-McDermid syndrome. All children had received some behavioral services at school prior to participation in this study, but the focus of those services was different from the skills taught in the current study. Data collection took place at participants' homes

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(Jack and Liza) or group home (Sue). A small bedroom was used to conduct sessions at each location.

Data Collection and Design

The dependent measure was the percentage of correct responses based on the caregivers' performance of the five steps of the incidental teaching procedure. Each trial involved the presentation of the instruction (see below) to the caregivers by one of two trained graduate students. A session consisted of three trials. Each trial was scored based on whether the caregiver correctly performed each of these five components. The percentage of correct responses was calculated by dividing the total number of correct responses in a trial by the total number of correct and incorrect responses in that trial; this was then converted into a percentage for each trial and then for a session. If Component e (see below) was conducted, the total number of correct and incorrect responses was five. If Component f was conducted, the total number of correct and incorrect responses was five, six, or seven. The mean percentage correct score across the three trials was calculated and represented the overall session score. The five components (six are listed, but children could perform only one of the last two) of caregiver behavior included (a) arrange the environment; (b) get the child's attention (i.e., child should be looking at you); (c) provide a discriminative stimulus (i.e., cue); (d) wait for the child's initial response for 5 s; (e) if the child emits a target response, deliver the item, help, or information to him or her immediately, along with verbal praise; (f) if the child does not emit a target response, use the following prompt sequence: Verbally prompt the target response; after 5 s, if the child does not emit the target behavior, model the target response; wait another 5 s; if the child still has not emitted a target response, physically guide the child to emit the target response. After the child emits the response (even if physically guided), deliver the item immediately.

An example of these components, as they were applied to teaching Linda and Kathy to mand for assistance to put their shoes on, is described below. First, the caregiver made shoes with laces visible but inaccessible. After making eye contact, she told the child to go outside to play. She then waited 5 s to give the child an opportunity to emit the target response. If the child requested assistance, the caregiver delivered it. If the child did not request assistance, the caregiver began the three-step prompting procedure described previously. A correct response was scored when the caregiver implemented a component as described previously; an incorrect response was scored when she implemented the component in any way other than that described previously. In addition, data on the percentage of trials with correct responding by the child were also collected. For children, a correct response was scored contingent on independent performance of the appropriate communicative response (i.e., before any of the three prompts were delivered). Three to nine trials were conducted per day, 2 to 4 days per week. A concurrent multiple baseline design across participants was used to evaluate the effects of training.

Interobserver agreement and integrity of the independent variable. Two graduate students scored data independently for approximately 34% of trials. An agreement was defined as both observers recording a correct or incorrect response. Agreement was determined by dividing agreements by agreements plus disagreements and multiplying by 100%; mean agreement was 100%. Data were also collected on the integrity of the independent variable. The scored categories included presentation of verbal or graphic feedback on prior performance, modeling, participation in rehearsal, and delivery of feedback based on the rehearsal. Integrity was 100%.

Procedure

Baseline. During each baseline trial, the caregiver was given the definition of incidental

teaching and asked to teach his or her child to emit the target response. The caregiver selected responses for each child. For Mike, the task was signing ''sand,'' which was followed by access to the sandbox at his group home; the task for Linda was signing ''shoes,'' which was followed by assistance with putting on her shoes and outside play; for Kathy, the task was to exchange a picture card, which was followed by assistance with putting on her shoes and outside play. Children did not have these skills before baseline began.

Review plus model plus feedback (training phase). During the training phase, the experimenter provided a list of steps that described how to conduct incidental teaching. Following the procedure review, caregivers were given graphic and verbal feedback on their baseline performances. The experimenter examined the baseline performance of each caregiver, described how many steps he or she performed correctly, and which steps needed improvement. The experimenter then demonstrated how to conduct incidental teaching for one trial. Next, the caregiver was asked to rehearse the incidental teaching procedure and perform three consecutive trials with the child. Immediately after the rehearsal, the experimenter delivered verbal feedback based on adherence to the components. The experimenter discussed the procedure, placing emphasis on the specific steps that had been implemented incorrectly. Rehearsal, modeling, and feedback were repeated until the caregiver achieved at least 80% correct responding for three consecutive sessions. Data collection on caregiver performance began when rehearsal with his or her child began.

Feedback-only phase. The feedback-only phase was conducted to ensure adequate caregiver performance in the absence of the list of incidental teaching steps, pretrial procedure review, or modeling. During the feedback-only phase, the caregiver was asked to complete three trials with the child. Then, the experimenter delivered verbal feedback based on adherence to the components. The experimenter discussed the procedure, placing emphasis on the specific steps that had been implemented incorrectly. The criterion for completion was to achieve 100% correct for three consecutive sessions.

Posttraining and different skill. At the start of each posttraining session, caregivers were asked to perform the incidental teaching procedure to the best of their ability. No training, rehearsal, modeling, or feedback was conducted during this phase. These sessions were conducted in the same setting as the training sessions. The criterion for completion during this phase was to achieve 100% correct for three consecutive sessions.

Two to 3 weeks after finishing posttraining sessions, probes of a different skill were conducted; all caregivers were asked to apply the procedure to a novel task. No list of incidental teaching steps was provided to the caregivers in this phase. The probe consisted of three sessions. The task during the different-skill phase for Mike was signing ''chip,'' which produced a chip; for Linda the task was signing ''grape,'' which produced a grape; for Kathy, the task was to exchange a picture card to request a glass of soda.

RESULTS AND DISCUSSION

Figure 1 (left) displays the percentage of the tasks performed correctly by caregivers throughout the study. The percentage of steps completed correctly was low for all caregivers during baseline. During the review plus model plus feedback package, the behavior of all caregivers increased to criterion level and persisted at high levels across all subsequent phases.

Figure 1 (right) displays the percentage of correct independent responses. During baseline, no child responded correctly. During the review plus model plus feedback phase and the feedback-only phase, each child exhibited inconsistent correct responses. During the posttraining phase, each child exhibited at least 33% correct

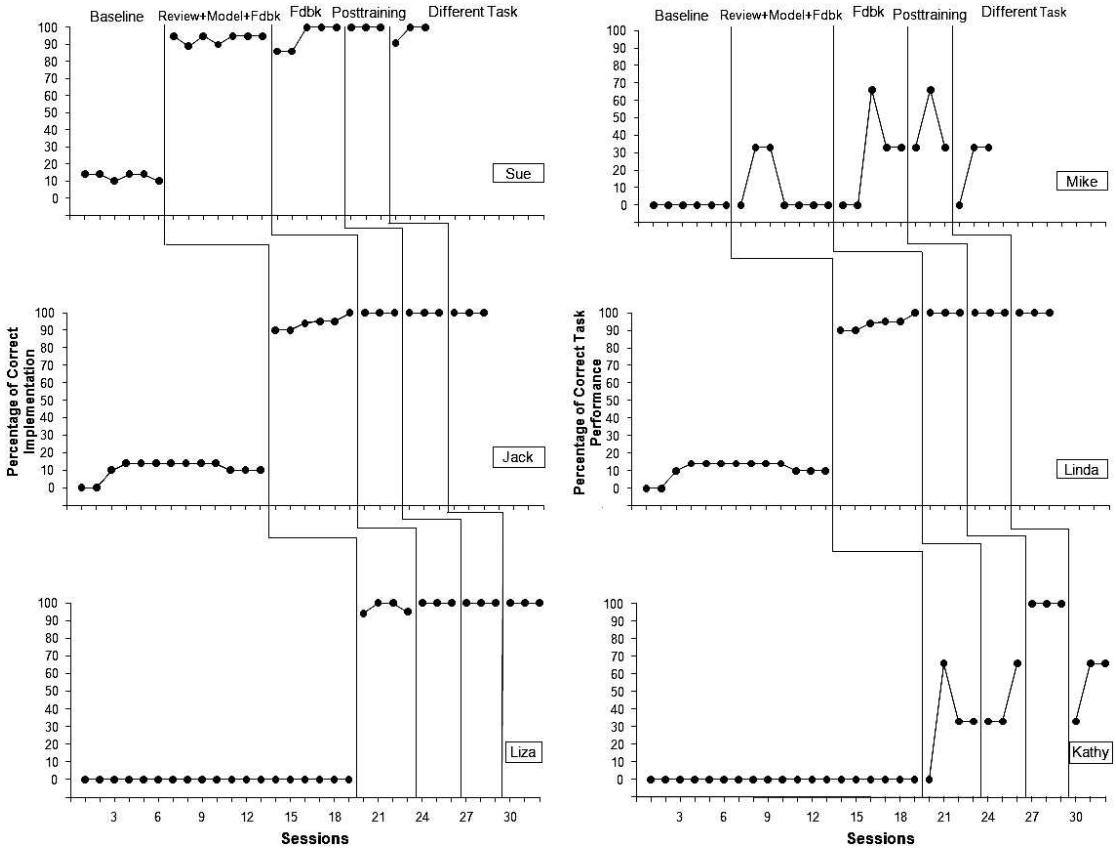

Figure 1. The left panel depicts the percentage of correct implementation of incidental teaching across all phases by Sue (top), Jack (middle), and Liza (bottom). The right panel depicts the percentage of correct task performance across all phases by Mike (top), Linda (middle), and Kathy (bottom).

responding. In the different-skill phase, Mike, Linda, and Kathy had means of 22%, 11%, and 55% correct responses, respectively.

Results of this study suggest that caregivers with limited experience in behavior analysis can be taught to implement incidental teaching. The total instruction time in the review plus model plus feedback phase and the feedback-only phase averaged about 28 min and 4 min per participant, respectively. This duration was short compared to that in previous research on training parents to use incidental teaching (Alpert & Kaiser, 1992; Charlop-Christy & Carpenter, 2000; Laski et al., 1988). The brevity of training should make it attractive to consultants who teach caregivers to implement behavior-analytic procedures.

However, despite the improvement in caregiver performance, the performances of two of the three children did not improve substantially. This outcome (i.e., improvements in parental performance of a procedure without concomitant improvement in child behavior) has been noted in previous research (e.g., Kuhn, Lerman, & Vorndran, 2003). Additional improvement might have occurred if the conditions had been extended. In addition, because the reinforcer was presented to the child after the third step (i.e., physical guidance) of the three-step prompting procedure, some participants may have learned that they could simply wait to be physically guided to make the correct response and then receive the programmed consequence. This could have reduced correct responding.

Another limitation of the study is that the activities were not chosen based on a formal stimulus preference assessment. Although the caregivers reported that the children preferred these activities, it is possible that the activities were not highly preferred; this might have affected the children's responding. A final limitation is that no baseline measures were collected for the skills that were assessed after the posttraining phase. Therefore, the extent to which participants improved their performances in the different-skill phase of the study is unknown.

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