

*FUNCTIONAL ANALYSIS AND TREATMENT OF  
NONCOMPLIANCE BY PRESCHOOL CHILDREN*

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A functional analysis showed that noncompliance occurred most often for 2 preschoolers when it resulted in termination of a preferred activity, suggesting that noncompliance was maintained by positive reinforcement. A differential reinforcement procedure, which involved contingent access to coupons that could be exchanged for uninterrupted access to the activity maintaining noncompliance, was successful in increasing compliance for both children.

DESCRIPTORS: functional analysis, noncompliance, preschool children

Noncompliance by young children is among the most common behavioral concerns of parents and teachers and may be associated with later academic difficulties (Taplin & Reid, 1977). Although noncompliance has been the subject of much clinical research (Houlihan, Sloane, Jones, & Patten, 1992), only one study has included an analysis of the function of noncompliance in preschool children. Reimers et al. (1993) used brief analyses to identify the function of noncompliance for 6 children in an outpatient clinic. They reported that noncompliance was reinforced by parental attention for 5 children and by escape from demands for 1 child. However, this study did not include intervention data. In addition, no instructions were delivered in the control (i.e., free play) condition. Thus, participants had no opportunity to emit noncompliant behavior in that condition, which precluded confident conclusions regarding behavioral function. Therefore, the purpose of the current study was to assess the function of noncompliance in 2 preschoolers during situations these children and their caregivers frequently experienced and to develop a function-based intervention to increase compliance based on the assessment results.

## METHOD

*Participants and Setting*

Fred and Sam (both 3-year-old boys) participated. Neither had a psychiatric diagnosis or a developmental disability, both had age-appropriate language skills, and both had been reported to be noncompliant by a preschool teacher. Specifically, both children were reported to ignore teacher instructions. Teachers also reported that noncompliance depended on the way in which an instruction was delivered (e.g., question vs. statement) and the activity that was in progress at the time the instruction was delivered (e.g., free play, circle time, clean-up activities). All sessions were conducted in a small tutoring room at the children's school. Two to six sessions were conducted per day, 2 to 3 days per week. A graduate student research assistant, who had no prior interactions with the children, served as the therapist.

*Response Measurement and Definitions*

Data were collected using paper and pencil on the percentage of trials with compliance or noncompliance. Compliance was defined as completing or initiating the activity the therapist described in the instruction within 10 s (noncompliance was the inverse of the compliance measure). A second independent observer recorded compliance during at least 50% of sessions for both children. Interobserver agreement was obtained by comparing observers'

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records on a trial-by-trial basis. An agreement was defined as both observers recording an instance of either compliance (or noncompliance) on a given trial. Agreement ranged from 91% to 100% for both participants during both the functional analysis and treatment evaluation phases.

Data on independent variable integrity were collected by recording whether or not the therapist delivered the coupon earned by the participant contingent on compliance during the treatment evaluation. Independent variable integrity values were 100% for all sessions for both participants. Finally, interobserver agreement on independent variable integrity was collected during at least 25% of treatment evaluation sessions. Agreement on independent variable integrity was 100% for both participants.

#### *Procedure*

A paired-stimulus preference assessment (Fisher *et al.*, 1992) was conducted using items typically found in the children's preschool setting (e.g., a toy kitchen, video, books). Both Fred's and Sam's most preferred activity was watching a Clifford<sup>TM</sup> video. Each child's teacher was asked to nominate an activity that was not preferred by participants; teachers independently chose picking up items off the floor for both children. As part of their daily free-play activities, students in the classroom could choose to watch age-appropriate educational videos (e.g., the Clifford<sup>TM</sup> video) in small groups in the corner of the room. Teachers often had to prompt students to turn off the television when free-play activities ended, which occurred three to four times per day. Students were also instructed to participate in clean-up activities several times per day. Based on the assessment results and the importance of these activities for these particular children, instructions to clean up and turn the video off and on were used during the functional analysis and treatment evaluation.

*Functional analysis.* A multielement design was used to evaluate three conditions on noncompliance. Each condition was presented as a trial. Each trial consisted of a 2-min preinstruction period, the presentation of the instruction, and a 3-min postinstruction period. Each session consisted of three trials (one per each type of condition), two to four sessions were conducted per day with brief breaks between each, and 12 sessions (36 trials) were conducted in total. The order of trials within a session was randomly determined.

In the preferred activity condition, the preferred video was played during the preinstruction period. After 2 min, the therapist delivered the instruction to turn off the video. If the child complied, the therapist said "thank you," and he was then free to engage in low-preference activities during the 3-min postinstruction period. If the child did not comply, the therapist did nothing (i.e., did not turn the video off) for the remainder of the 3-min postinstruction period. This condition was designed to test for maintenance by positive reinforcement because noncompliance resulted in continued access to the high-preference activity.

In the nonpreferred activity condition, low-preference items were available during the preinstruction period. After 2 min, the therapist delivered the instruction to pick up the papers from the floor. If the child complied, the therapist said "thank you," and he was then free to interact with the low-preference items in the room for the remainder of the 3-min postinstruction period. If the child did not comply, the therapist did nothing (i.e., did not represent the instruction or guide the participant to comply) for the remainder of the 3-min postinstruction period. This condition was designed to test for maintenance by negative reinforcement because noncompliance resulted in avoidance of the nonpreferred activity.

In the control condition, low-preference items were available during the preinstruction period.

After 2 min, the therapist delivered the instruction to turn on the video. If the child complied, the therapist said "thank you," and the child then had access to the video for the remainder of the 3-min postinstruction period. If the child did not comply, the therapist did nothing (i.e., did not turn on the video) for the remainder of the 3-min postinstruction period. Because noncompliance produced continued access to low-preference activities and no access to the preferred activity (i.e., video), it was hypothesized to be unlikely in this condition.

*Treatment evaluation.* Based on the functional analysis results, the condition involving preinstruction access to the preferred activity (i.e., Clifford<sup>TM</sup> video) and an instruction to turn off the video were used as the context for the treatment evaluation. An intervention using differential reinforcement of alternative behavior (DRA) was evaluated with each child in reversal designs.

Each session consisted of 10 trials, each consisting of the single instruction to turn off the video. Baseline sessions were identical to the preferred activity condition of the functional analysis. The same instruction as in baseline was delivered on each trial in the DRA phase. If the child did not comply with the instruction, the therapist did nothing (i.e., did not turn off the video) for the remainder of the 3-min postinstruction period (i.e., extinction was not in place). If the child complied with the instruction, he earned a coupon (i.e., a brightly colored, laminated piece of construction paper). After receiving the coupon, the child remained in the room for the 3-min postinstruction period and was then escorted out of the room by the therapist for a break, as in baseline. Each coupon was exchangeable for 3 min of uninterrupted access to the preferred video, multiple coupons could be exchanged for extended periods of uninterrupted access to the video (e.g., six coupons could be exchanged for 18 uninterrupted minutes), and coupons could be exchanged following each 10-trial

session. The coupon system was described and modeled for each child before the DRA phase began.

## RESULTS AND DISCUSSION

The left panels of Figure 1 depict the results of the functional analysis. Fred was noncompliant with the majority of instructions delivered in the preferred activity condition (88%). In contrast, Fred was rarely noncompliant with the instructions delivered in the control (12%) and the nonpreferred activity conditions (0%). Sam was also noncompliant with most instructions delivered in the preferred activity condition (63%), and he was never noncompliant during the control and nonpreferred activity conditions. Thus, it appeared that noncompliance was evoked by the instruction to terminate a preferred activity and was maintained by continued access to that activity.

The right panels of Figure 1 depict the results of the treatment evaluation. Fred rarely complied with the instruction to turn off the video in baseline ( $M = 7\%$ ). By contrast, Fred complied with all of the instructions delivered during the initial DRA condition. His compliance returned to low levels in the second baseline phase ( $M = 28\%$ ). During the final DRA phase, Fred's compliance increased to high levels ( $M = 97\%$ ). Sam did not comply with any of the instructions delivered during baseline. Compliance increased in the first DRA phase ( $M = 80\%$ ). Compliance was infrequent during the return to baseline ( $M = 17\%$ ). Sam's compliance again increased to high levels in the second DRA phase ( $M = 88\%$ ).

The results of this study add to the existing literature on the treatment of noncompliance by demonstrating that functional analysis can be used to determine the function of noncompliance in situations often experienced by preschoolers and their teachers. In addition, a function-based intervention, differential

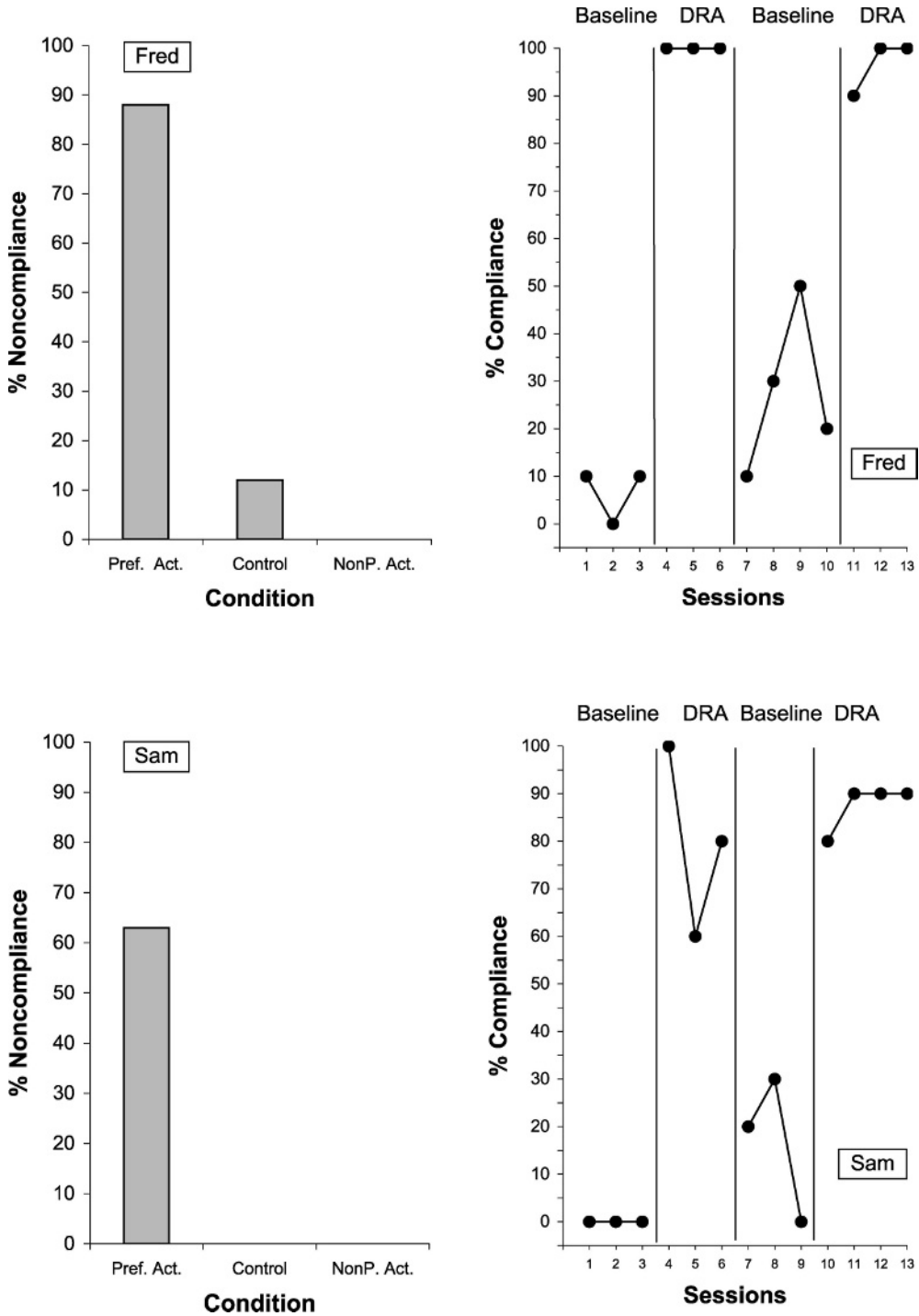


Figure 1. Percentage of trials with noncompliance across the three conditions of the functional analysis for Fred (top left) and Sam (bottom left). Percentage of trials with compliance during each session across baseline and DRA phases of the treatment evaluation for Fred (top right) and Sam (bottom right).

reinforcement of compliance with coupons exchangeable for uninterrupted access to the activity that maintained noncompliance, was effective in increasing compliance for both children. Noncompliance by preschool children is a common problem (MacKenzie-Keating, McDonald, Kanchak, & Erickson, 1996). Based on the brevity of our assessment and the effectiveness of our intervention, we recommend these methods for assessing and treating noncompliance in child-care settings.

One limitation of our assessment is the restricted variety of tasks used in the functional analysis. Children were exposed to only two tasks that may have evoked noncompliance (turning off a video and picking up items off the floor). Although these activities were frequently experienced by these children and may be familiar to other preschoolers, it is possible that other tasks occasioned noncompliance as well. Therefore, we evaluated only some of the variables that may be associated with noncompliance by young children. Future research should include a wider variety of tasks and situations to identify more variables that may influence noncompliance.

The mechanism responsible for the decrease in noncompliance during the DRA conditions is unclear. Extinction did not play a role because it was not in place (i.e., noncompliance resulted in 3 min of continued access to the video). Although compliance and noncompliance both resulted in a total of 30 min of access to the video across a 10-trial session, compliance also resulted in immediate access to a possible conditioned reinforcer. Therefore, one possibility is that the coupons functioned as conditioned reinforcers, and this added reinforcement for compliance resulted in that response being favored. A plausible alternative is that the uninterrupted access to the preferred video gained via compliance was more reinforcing than the brief and intermittent access available for noncompliance. Finally, the description of the contingencies probably also

played some role. Although it is likely that the conditioned reinforcing properties of the coupons and the uninterrupted access to the video were responsible, at least in part, for the behavior changes observed, compliance increased to 100% immediately after introduction of the intervention for both children. Thus, the children's behavior was likely controlled by the descriptions of the contingencies, at least during the initial session of the DRA intervention.

At the conclusion of the study, a modified version of DRA was implemented in the children's classroom. Coupons were earned for compliance with instructions that were judged by teachers to be problematic for each child, and each coupon was exchangeable for 1 min of uninterrupted access to a preferred activity at times that were convenient for the teacher. Further research should involve the direct evaluation of function-based treatments for noncompliance that are implemented for extended periods of time by classroom teachers of young children.

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