

FURTHER EVALUATION OF ANTECEDENT INTERVENTIONS ON COMPLIANCE: THE EFFECTS OF RATIONALES TO INCREASE COMPLIANCE AMONG PRESCHOOLERS

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Functional analyses were conducted to identify reinforcers for noncompliance exhibited by 6 young children. Next, the effects of rationales (statements that describe why a child should comply with a caregiver-delivered instruction) were evaluated. In Experiment 1, 3 participants received the rationales immediately after the therapist's instruction. In Experiment 2, 3 additional participants received more practical rationales immediately before the therapist's instruction. The results indicate that rationales were ineffective for all 6 children. A guided compliance procedure increased compliance for 1 child; contingent access to preferred items with or without response cost increased compliance for the other participants. Although levels of problem behavior varied within and across participants, they were often higher in the rationale and guided compliance conditions.

Key words: extinction, functional analysis, guided compliance, noncompliance, preschool children, rationales

Noncompliance is defined as the failure to follow a specific instruction delivered by a caregiver (Forehand, Gardner, & Roberts, 1978). The prevalence of noncompliance among young children is estimated to be between 8% and 54% (Crowther, Bond, & Rolf, 1981; Rodriguez, Thompson, & Baynham, 2010), and it is the most common childhood problem for which professional help is sought (Bernal, Klinnert, & Schultz, 1980). In addition, noncompliance is correlated with other, more serious behavior problems such as conduct disorder and oppositional defiant disorder, which are diagnosed later in life (Keenan, Shaw, Delliquadri, Giovannelli, & Walsh, 1998; Keenan & Wakschlag, 2000). Noncompliance with instructions may be particularly common when children are asked to terminate a preferred activity (e.g., free play) or initiate a nonpreferred activity (e.g., cleaning up).

A variety of antecedent-based interventions have been implemented to increase compliance. These include specific types of instructions, the high-probability (high-*p*) instructional sequence, noncontingent access to preferred items, and advance notice of an upcoming transition. Schaffer and Crook (1980) compared direct instructions (e.g., “do this”) to indirect instructions (e.g., “shouldn’t we do this?”) with mothers and their typically developing children and found that compliance was greater when mothers used direct instructions, but only when the child was asked to perform a task with an object. Other research has also found that direct, single-step instructions are effective at increasing child compliance (Roberts, McMahon, Forehand, & Humphreys, 1978).

The high-*p* instructional sequence is likely the most studied antecedent intervention for noncompliance. In addition, unlike many other antecedent interventions for noncompliance, which are most appropriate for situations in which the instruction delivered involves termination of a preferred activity or initiation of a nonpreferred activity, the high-*p* instructional

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sequence is suited to a wide variety of circumstances. The high-*p* instructional sequence consists of a series of high-*p* instructions issued immediately before a low-probability instruction (i.e., the target instruction). Mace et al. (1988) were the first to evaluate the high-*p* instructional sequence to increase compliance. Across five experiments, Mace et al. showed that compliance among four adult participants with developmental disabilities improved when the high-*p* sequence was used. Mace and Belfiore (1990) also used the high-*p* sequence to increase compliance and decrease stereotypy in a woman with mental retardation.

Although a number of studies have shown that the high-*p* instructional sequence is effective at increasing compliance, other studies have found either negative or mixed results. For example, Zarcone, Iwata, Hughes, and Vollmer (1993) found that the high-*p* instructional sequence was not effective at increasing compliance and decreasing self-injury exhibited by a woman with mental retardation. Zarcone, Iwata, Mazaleski, and Smith (1994) found similar results with two men with developmental disabilities. Houlihan, Jacobson, and Brandon (1994) showed that the high-*p* sequence was effective at increasing compliance in a young child with autism, but only when the interprompt time was brief. Rortvedt and Miltenberger (1994) found that the high-*p* sequence was effective in increasing compliance for one typically developing girl but not for another. Similarly, Wilder, Zonneveld, Harris, Marcus, and Reagan (2007) evaluated the high-*p* instructional sequence to increase compliance among preschoolers, some of whom had developmental disabilities. They found that the high-*p* instructional sequence was effective for one of three participants, but extinction was necessary to increase compliance by the other two participants.

Noncontingent access to preferred items has also been evaluated to increase compliance, particularly in the context of transitions. Cote,

Thompson, and McKerchar (2005) examined the effects of providing three typically developing children with noncontingent access to a toy during a transition. This procedure was ineffective, necessitating an extinction contingency to increase compliance. Wilder, Zonneveld, et al. (2007) replicated this procedure to increase compliance among preschoolers. As in the Cote et al. study, Wilder et al. found that noncontingent access to toys was ineffective and that extinction was necessary to increase compliance.

The provision of a warning or advance notice of an upcoming instruction or change in activity has also been evaluated to increase compliance. Cote et al. (2005) examined this procedure to increase compliance among three children in a preschool setting. The experimenter delivered a warning statement (e.g., “2 min to potty”) to participants 2 min before an instruction. The results showed that the warning was ineffective for all three participants. Wilder, Zonneveld, et al. (2007) replicated the warning evaluated by Cote et al. and also found it to be ineffective. Wilder, Chen, Atwell, Pritchard, and Weinstein (2006) evaluated the effects of advance notice (e.g., “in 2 min the video will be turned off”) of an upcoming transition on tantrums (compliance was also measured) exhibited by two typically developing children. Advance notice was ineffective at decreasing tantrums or increasing compliance.

Another antecedent-based intervention that is sometimes used to increase child compliance is the delivery of rationales. A *rationale* is a statement that describes the reasons a child should comply with a caregiver-delivered instruction. Although the extent to which rationales are used by caregivers and the extent to which they are effective have not been empirically evaluated, their use is recommended by some popular books on managing child non-compliance (e.g., Kapalka, 2007; McMahon & Forehand, 2003; Nelsen, 2006). It is possible that rationales may acquire antecedent control over compliance if they are delivered consis-

tently and paired with an effective consequence. Alternatively, rationales might represent what Malott, Whaley, and Malott (1997) refer to as incomplete rules. That is, the instruction and rationale specify the required response as well as a reason for engaging in the response, but do not specify the consequences involved in engaging in (or failure to engage in) the response. If this is the case, the effectiveness of rationales might be suspect. Of course, rationales would be expected to work only with individuals who have an intact listener repertoire.

The use of rationales to increase compliance represents a recommended but understudied intervention procedure. It is important to examine these procedures so that effective interventions can be identified and disseminated. In addition, identification of effective interventions may decrease the use of ineffective procedures. Thus, the purpose of this study was to evaluate the use of rationales to increase compliance among preschool children.

EXPERIMENT 1

Parents and other caregivers sometimes deliver instructions to children and then provide rationales to support the instructions (e.g., "Give me the — because it is almost time to clean up"). The purpose of Experiment 1 was to evaluate the effects of this arrangement on child compliance.

Method

Participants and setting. Three boys, all of whom had been reported by a preschool teacher or parent to ignore instructions, participated in the study. Ricky, Ian, and Andy were 36 months old, 46 months old, and 40 months old, respectively, at the time of the study. Ricky and Ian did not have a psychiatric diagnosis or a developmental disability; Andy had been diagnosed with autism. Based on teacher and parent report as well as preschool classroom placement, all three participants had age-appropriate language skills. Sessions were conducted in a small

room at the children's school (Ricky and Andy) or home (Ian). Two to six sessions were conducted per day, 2 to 3 days per week. A graduate student research assistant, unfamiliar to the children when the study began, served as therapist.

Response measurement and definitions. Data collectors recorded the occurrence or nonoccurrence of compliance (functional analysis and intervention analysis) and problem behavior (intervention analysis) on each instructional trial. *Compliance* was defined as the child independently completing or initiating the activity described in the instruction within 10 s. *Problem behavior* was defined as the participant engaging in aggression (e.g., hitting, pinching, kicking), property disruption (e.g., throwing toys, hitting objects), whining, crying, or saying "no" to the therapist immediately after she delivered an instruction.

A second independent observer recorded target behavior (compliance and problem behavior) during at least 50% of sessions for each participant. Interobserver agreement was obtained by comparing observers' records on a trial-by-trial basis. An agreement was defined as both observers recording the occurrence or both observers scoring the nonoccurrence of a target behavior on a given trial. A disagreement was defined as one observer scoring the occurrence and one observer recording the nonoccurrence of target behavior on a given trial. Mean agreement was calculated by dividing the number of agreements by the number of agreements plus disagreements and converting the ratio to a percentage. Mean agreement values ranged from 90% to 100% for all participants during the functional analysis for compliance. During the intervention evaluation, mean agreement on compliance was 98% (range, 90% to 100%), 96% (range, 92% to 100%), and 98% (range, 94% to 100%) for Ricky, Ian, and Andy, respectively. During the intervention evaluation, mean agreement on problem behavior was 94% (range, 90% to

100%), 94% (range, 92% to 100%), and 88% (range, 76% to 100%) for Ricky, Ian, and Andy, respectively.

During the intervention evaluation, data on the integrity of the independent variable were collected by recording whether the therapist appropriately delivered the rationale during the rationale condition, used hand-over-hand guidance in the guided compliance condition (Ricky and Andy), and delivered the preferred item in the contingent access condition (Ian and Andy). Integrity values were 100% for all sessions for all participants. Interobserver agreement on integrity was assessed during at least 25% of intervention sessions and was 100% for all participants.

Procedure. First, two separate paired-stimulus preference assessments (Fisher *et al.*, 1992) were conducted to identify high-preference edible items and high- and low-preference play materials from an array of stimuli found in the children's classroom or home. The most preferred edible items for Ricky, Ian, and Andy were candy corn, gummy candy, and chocolate, respectively. The most preferred play materials for Ricky, Ian, and Andy were a toy dagger, Power Rangers figures, and a toy cow, respectively. Low-preference play materials were a toy car, a toy dragon, and a toy motorcycle for Ricky, Ian, and Andy, respectively. Finally, each child's teacher or parent was asked to nominate a task that was not preferred by participants; all caregivers independently chose picking up items off the floor (*i.e.*, cleaning up).

Functional analysis. The trial-based functional analysis was similar to procedures described by Wilder, Harris, Reagan, and Rasey (2007) and Wilder, Zonneveld, *et al.* (2007). Three assessment conditions were evaluated using a multielement design. Each condition was presented as a trial. The duration of each trial was approximately 5 min and consisted of a 2-min preinstruction period, the presentation of the instruction, and a 3-min postinstruction period. At least six trials (two per each type of

condition) were conducted per day; a total of 36 trials was conducted. The order in which trials were conducted was determined randomly.

During the preferred activity condition, participants engaged with high-preference toys identified via the preference assessment. After 2 min, the therapist delivered the instruction to "give me the toy." If the child complied, the therapist said "thank you," and the child was free to play with a low-preference toy (also identified via the preference assessment) during the 3-min postinstruction period. If the child did not comply, the therapist did nothing (*i.e.*, did not remove the toy) for the remainder of the period. Because noncompliance resulted in continued access to high-preference toys, this condition tested for maintenance via positive reinforcement.

During the nonpreferred activity condition, toys were not available during the preinstruction period. After 2 min, the therapist delivered an instruction to complete the low-preference task that had been identified via teacher or caregiver interview (*i.e.*, picking up papers that were on the floor). If the child complied, the therapist said "thank you," and the child was free to do whatever he liked for the remainder of the 3-min postinstruction period (typically 1.5 to 2 min). If the child did not comply, the therapist did nothing (*i.e.*, did not re-present the instruction or guide the participant to comply) for the remainder of the period. Because noncompliance resulted in avoidance of the nonpreferred activity, this condition tested for maintenance via negative reinforcement.

During the control condition, low-preference play materials that had been identified via the preference assessment were available during the preinstruction period. After 2 min, the therapist produced the child's high-preference toy and delivered an instruction to play with this toy. If the child complied, the therapist said "thank you," and the child had access to the high-preference toy for the remainder of the 3-min postinstruction period. If the child did not

comply, the therapist did nothing (i.e., did not give the child the toy) for the remainder of the period. This condition served as a control condition because it eliminated events designed to evoke (low-preference task) and reinforce (contingent access to high-preference play materials) noncompliance in the preferred activity and nonpreferred activity test conditions.

Intervention (rationales). Based on the functional analysis results, the preferred activity condition was used as the context for the treatment evaluation. The effects of rationales were evaluated with each child in reversal designs. In addition, a guided compliance procedure was evaluated for Ricky and Andy, and access to preferred edible items contingent on compliance (contingent access) was evaluated for Ian and Andy. The guided compliance and contingent access interventions were chosen based on convenience and restrictions for each child (e.g., some parents did not approve of the use of physical guidance with their child). Each session consisted of either five (Ricky and Andy) or three (Ian) trials, and each trial consisted of a single instruction. Baseline sessions were identical to the preferred activity condition of the functional analysis and began with the therapist-delivered instruction, "Give me the —."

During the rationale conditions, the therapist randomly presented one of three rationales with the instruction on each trial. The three rationales were "Give me the — because it is good to do what adults say," "Give me the — because it is almost time to clean up," and "Give me the — because it is good to share with others." If the child complied, the therapist said "thank you." All children stayed in the session room during the 3-min postinstruction period and then received a brief break, as in baseline. If the child did not comply with the instruction, the therapist did nothing for the remainder of the period (i.e., extinction was not in place).

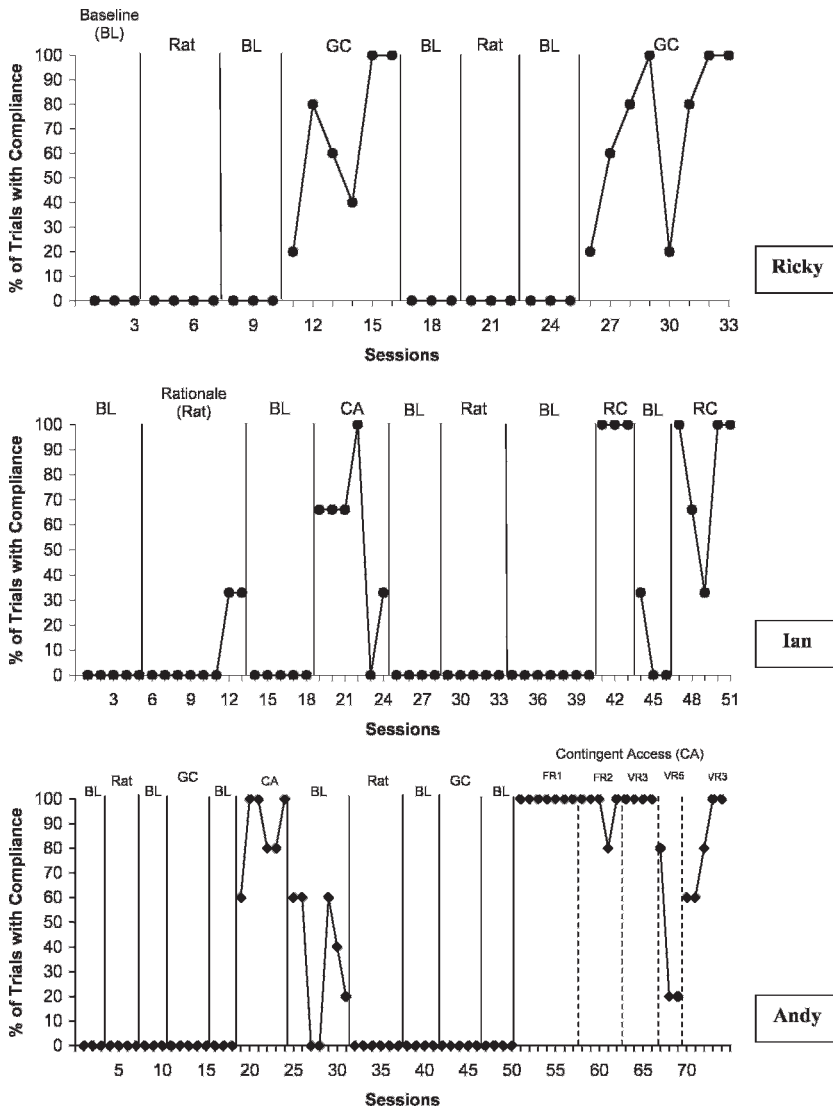
During the guided compliance condition (Ricky and Andy), noncompliance with the initial instruction resulted in the therapist

repeating the instruction after 10 s, obtaining eye contact with the participant, and demonstrating giving a toy. Contingent on further noncompliance, the therapist repeated the instruction a third time and used hand-over-hand guidance to prompt compliance. Compliance was scored if the participant gave the therapist the toy on the first delivery of the instruction only.

During the contingent access condition, the therapist held a small piece of each participant's most preferred edible item in her hand when presenting the instruction to give the toy. Contingent on compliance with the instruction within 10 s, the therapist immediately gave the participant the small piece of food. If the participant did not comply with the instruction, the therapist did nothing for the remainder of the 3-min postinstruction period (i.e., extinction was not in place). For Ian, a response-cost component was added to the contingent access condition. This consisted of the removal of a small portion of a previously delivered edible item (Ian ate slowly, therefore he often had a portion of the previously delivered item remaining when a subsequent trial began) contingent on noncompliance. For Andy, an attempt to fade the delivery of his most preferred edible item during the contingent access condition was made. The initial fixed-ratio (FR) 1 schedule was followed by FR 2, variable-ratio (VR) 3, and VR 5.

Results and Discussion

The results of the functional analysis are not depicted due to space constraints. Ricky displayed the lowest levels of compliance in the preferred activity condition (0% compliance) and was compliant in the nonpreferred activity (75% compliance) and the control (100% compliance) conditions. Ian also displayed low levels of compliance in the preferred activity condition (0% compliance) and high levels of compliance during the nonpreferred activity (91% compliance) and the control (91% compliance) conditions. Finally, Andy



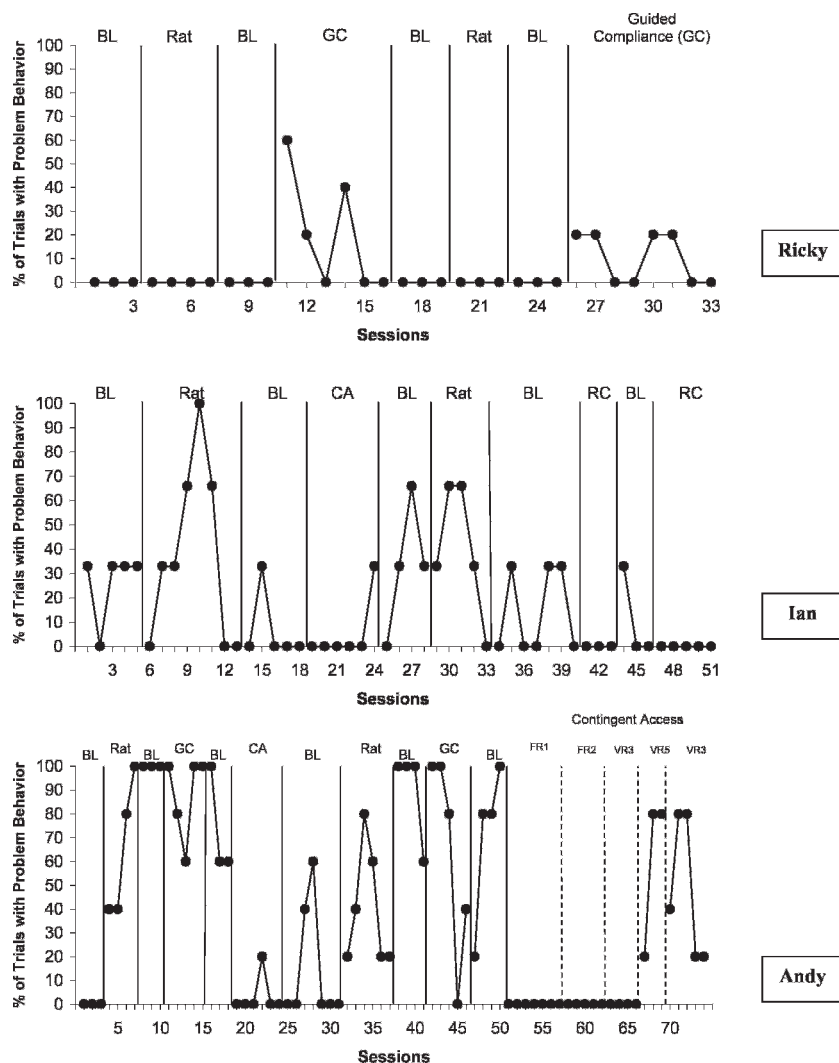


Figure 2. Percentage of trials with problem behavior across baseline (BL), rationale (Rat), guided compliance (GC), contingent access to preferred items (CA), and contingent access to preferred items plus response cost (RC) conditions for Ricky (top), Ian (middle), and Andy (bottom).

the end of this phase. Therefore, a response-cost component was added, which increased compliance to high levels. The failure of contingent access to preferred edible items to increase compliance for Ian might have been a result of satiation. For Andy, guided compliance was ineffective (although this condition may have been effective eventually, it could not be continued due to time constraints), and contingent access to preferred edible items was

immediately effective in increasing compliance. An attempt to thin the reinforcement schedule was made. Compliance decreased when the schedule was thinned to VR 5, but increased when the schedule returned to VR 3.

Figure 2 depicts levels of problem behavior during the treatment evaluation. For Ricky, problem behavior occurred exclusively during the guided compliance conditions, but appeared to subside during each implementation. Ian

exhibited most of his problem behavior during rationale conditions. Andy's problem behavior occurred during all conditions, but was most frequent during baseline, rationale, and guided compliance and least frequent during contingent access to preferred items.

In summary, the results of Experiment 1 suggest that rationales were not effective in increasing compliance and that other behavioral interventions were substantially more effective.

EXPERIMENT 2

Although the results of Experiment 1 indicated that rationales were not effective at increasing compliance, the rationales were delivered after the therapist's instruction. It is possible that the delivery of rationales after the instruction hindered the development of stimulus control. That is, instructions may be effective because they act as discriminative stimuli; in their presence, compliance produces reinforcement. Any additional information or stimuli delivered between the instruction and the child's opportunity to comply may interfere with the development of stimulus control and reduce the likelihood of compliance. Indeed, some popular books have recommended that instructions be delivered immediately prior to the opportunity for children to comply (McMahon & Forehand, 2003). The purpose of Experiment 2 was to again evaluate the effects of rationales on compliance. However, in Experiment 2, rationales were delivered immediately *before* the instruction. In addition, the specific rationales used in Experiment 2 provided a more practical justification for compliance.

Method

Participants and setting. Three young boys participated in the study. Ed, Carl, and Sam were 52 months old, 46 months old, and 40 months old, respectively, at the time of the study. None of the participants had a psychiatric diagnosis or a developmental disability. As with the three participants in Experiment 1, all

had been reported by a preschool teacher or parent to ignore instructions. Based on teacher and parent report as well as preschool classroom placement, all three participants also had age-appropriate language skills. Sessions were conducted in a small room at the children's school (Carl and Sam) or home (Ed). Two to six sessions were conducted per day, 2 to 3 days per week. A graduate student research assistant, who was unfamiliar to the children at the start of the study, served as therapist.

Response measurement and definitions. Data collection and interobserver agreement procedures were identical to those of Experiment 1. A second independent observer recorded compliance and problem behavior during at least 50% of sessions for all three children. For compliance, mean agreement values ranged from 86% to 100% for all participants during the functional analysis. During the intervention evaluation, mean agreement on compliance was 100%, 98% (range, 90% to 100%), and 96% (range, 86% to 100%) for Ed, Carl, and Sam, respectively. During the intervention evaluation, mean agreement on problem behavior was 100%, 96% (range, 92% to 100%), and 95% (range, 84% to 100%) for Ed, Carl, and Sam, respectively. During the intervention evaluation, data on integrity of the independent variable were collected by recording whether the therapist delivered the rationale during the rationale condition and delivered the preferred item in the contingent access condition. Integrity was 100% for all sessions for all participants.

Procedure. As in Experiment 1, two separate paired-stimulus preference assessments were conducted to identify high-preference edible items and high- and low-preference play materials from an array of stimuli found in the children's classroom or home. The most preferred edible items for Ed, Carl, and Sam were cheese puffs, candy corn, and candy corn, respectively. The most preferred play materials for Ed, Carl, and Sam were a letter game, a Transformer figure, and a Power Rangers

figure, respectively. Low-preference play materials were a toy sword, a Power Rangers figure, and a toy car for Ed, Carl, and Sam, respectively. Finally, each child's teacher or parent was asked to nominate a task that was not preferred by participants; all caregivers independently chose picking up items off the floor (i.e., cleaning up).

The functional analysis for each participant was identical to the trial-based functional analysis described in Experiment 1. During the intervention evaluation, the preferred activity condition was used as the context for the treatment evaluation (based on the results of the functional analysis). The effects of rationales were evaluated with each child in reversal designs. In addition, access to preferred edible items contingent on compliance (contingent access) was evaluated for all three participants. The schedule of food delivery during the contingent access phase was also thinned for all three participants. Each session consisted of five trials, and each trial consisted of a single instruction.

Baseline sessions were identical to the preferred activity condition of the functional analysis and began with the therapist-delivered instruction, "Give me the —." The rationale condition was similar to the rationale condition described in Experiment 1, except that the rationales were delivered immediately before the instruction. In addition, the specific rationales used were more practical (e.g., "Someone might trip on that and get hurt. Give me the —," "It's time to do another activity. Give me the —," "You might have a friend come over to play later, and we want a clean house. Give me the —," "Someone may need to use this room. Give me the —."). The contingent access condition was conducted as described in Experiment 1. The delivery of Ed's most preferred edible item during the contingent access condition was thinned to an FR 2 schedule. For both Carl and Sam, the schedule was thinned to FR 2, VR 3, and VR 5.

Results and Discussion

As in Experiment 1, the results of the functional analysis are not depicted. Ed displayed the lowest levels of compliance (43%) in the preferred activity condition and higher levels in the nonpreferred activity (64%) and the control (91%) conditions. Carl also displayed low levels of compliance (0%) in the preferred activity condition and higher levels of compliance during the nonpreferred activity (71%) and the control (88%) conditions. Sam also displayed low levels of compliance (37%) in the preferred activity condition and high levels of compliance during the nonpreferred activity (100%) and the control (88%) conditions. As in Experiment 1, it appeared that all participants' noncompliance was evoked by the instruction to terminate a preferred activity and was maintained by continued access to that activity.

Figure 3 depicts levels of compliance during the treatment evaluation. Low levels of compliance were observed during baseline and rationale conditions for all three participants. For Ed, compliance improved when he received access to his preferred edible item contingent on compliance. Compliance remained at 100% when the delivery of the edible item was thinned to an FR 2 schedule. For Carl, contingent access to preferred edible items was also effective in increasing compliance. Compliance remained at high levels as the schedule of reinforcement was thinned to a VR 5 schedule. For Sam, contingent access to preferred edible items was also effective in increasing compliance. Compliance remained high as the delivery of the edible items was thinned to a VR 3 schedule, but decreased when the schedule was thinned to VR 5. High levels of compliance returned when the scheduled reverted to FR 2. Figure 4 depicts problem behavior levels during the treatment evaluation. For Ed, problem behavior occurred mainly during the rationale conditions. Carl and Sam exhibited most of their problem behavior

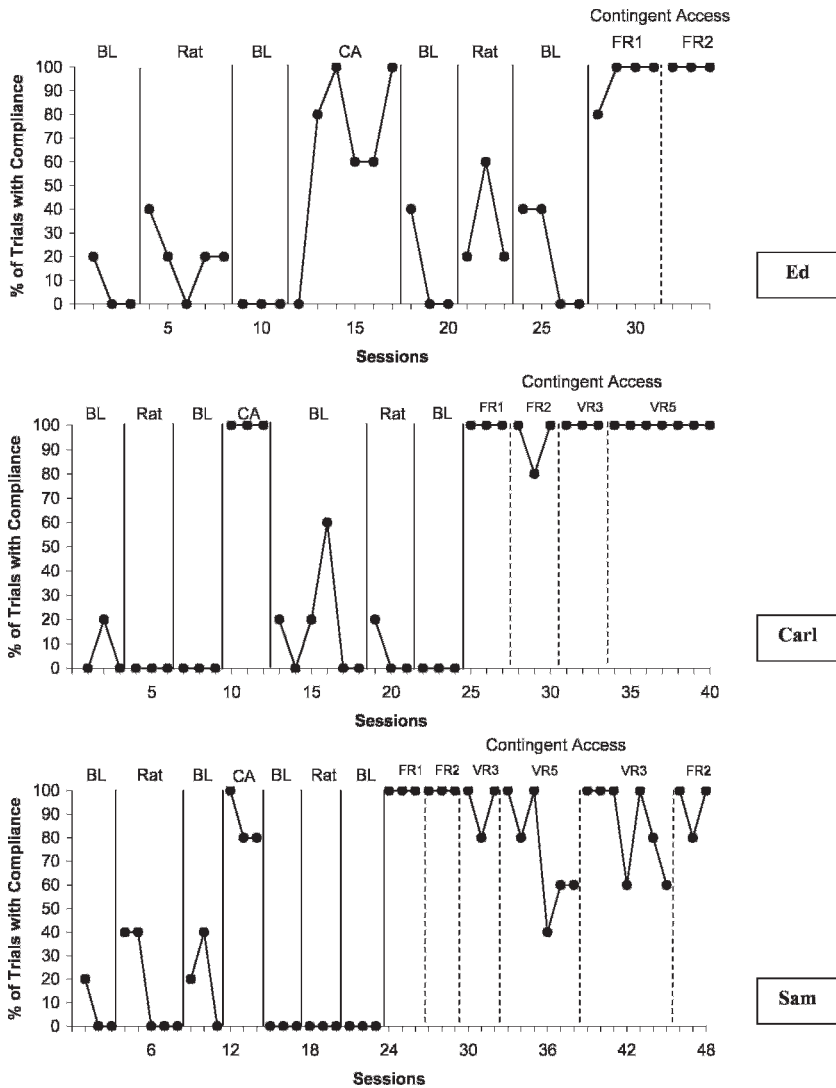


Figure 3. Percentage of trials with compliance across baseline (BL), rationale (Rat), and contingent access to preferred items (CA) conditions for Ed (top), Carl (middle), and Sam (bottom).

during rationale conditions and during thinning of the preferred edible item schedule.

In summary, the results of Experiment 2 suggest that rationales delivered by a therapist immediately before an instruction were not effective in increasing compliance and were associated with some degree of problem behavior. Conversely, contingent access to preferred food items was successful in increasing compliance, especially at dense schedule values.

GENERAL DISCUSSION

The results of the present study showed that rationales, delivered either before or after an instruction, were ineffective in increasing compliance among preschool children. Despite its recommendation in parenting books (e.g., McMahon & Forehand, 2003), the delivery of rationales produced little increase in compliance and evoked problem behavior in some children.

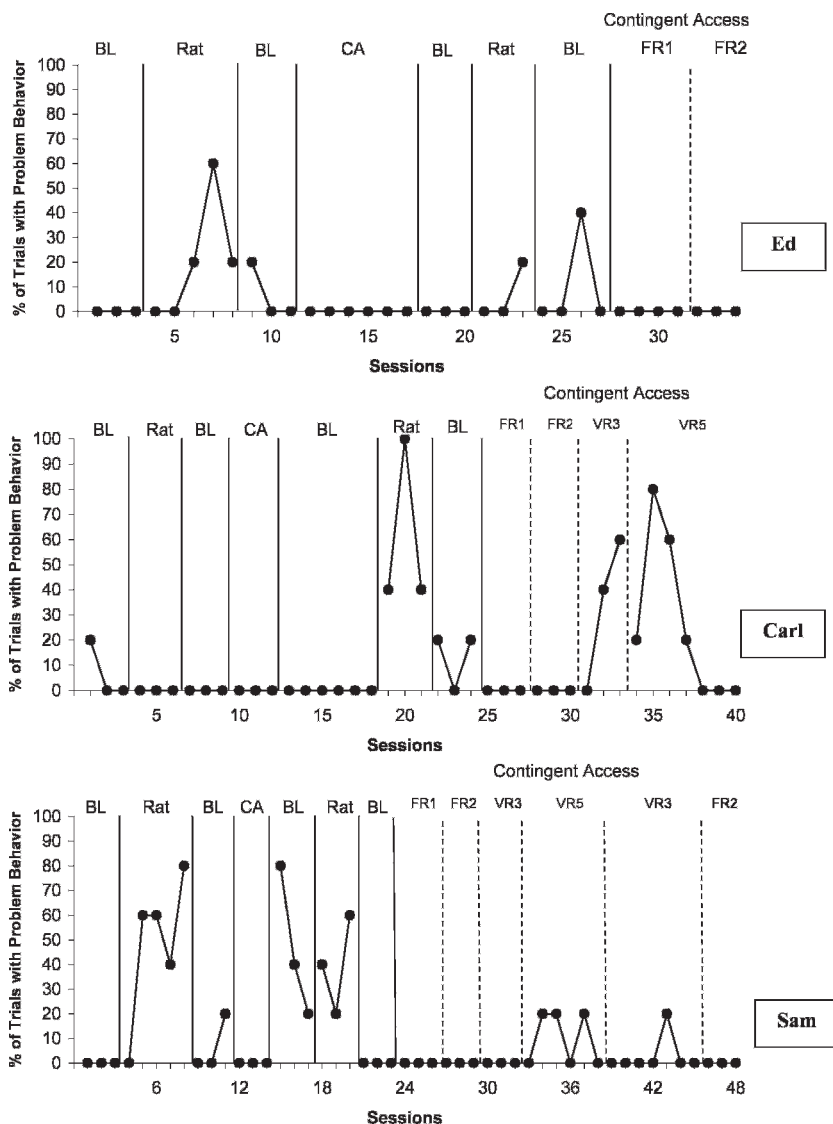


Figure 4. Percentage of trials with problem behavior across baseline (BL), rationale (Rat), and contingent access to preferred items (CA) conditions for Ed (top), Carl (middle), and Sam (bottom).

Consequence-based interventions, such as guided compliance and access to preferred items contingent on compliance, were substantially more effective in increasing compliance.

It should be acknowledged that only a few specific rationales were evaluated in the present study, and it is possible that the content of a rationale changes its effects. The rationales used in Experiment 1 did not provide immediate and practical justification for compliance. Although

the rationales in Experiment 2 did, it is possible that rationales that provide an immediate justification are more effective than rationales that do not. Future research should continue to evaluate the effects of this specific type of rationale on compliance.

Although the rationales used in this study were ineffective, it should be noted that they were delivered concurrent with (i.e., either immediately before or after) the initial demand. An

alternative practice is to deliver a rationale contingent on the first instance of noncompliance, or when a child asks "why?" after the presentation of a demand. Although this strategy is not recommended by popular books on noncompliance (e.g., McMahon & Forehand, 2003), it may be frequently used by parents and teachers and has not yet been empirically evaluated. Future research should also evaluate the effectiveness of rationales delivered in this manner, because their delivery contingent on noncompliance might worsen compliance.

More problem behavior occurred during the rationale conditions than in many of the other conditions. However, problem behavior in the rationale condition often took the form of vocal responses to what the therapist said (e.g., "No, it is not time to clean up!"). Some physical aggression was observed, but mainly in the guided compliance condition (Ricky) and during the conditions in which a preferred edible item was faded. It is interesting to note that for Ricky, both the highest levels of compliance and problem behavior occurred in the guided compliance conditions. Furthermore, within each of the two guided compliance conditions, as compliance increased, problem behavior generally decreased. This pattern of responding suggests that extinction was the mechanism responsible for both effects. In other words, this pattern of responding is similar to the pattern that would be expected if extinction was in operation.

The results of this study are consistent with other research on antecedent interventions for noncompliance. Collectively, this research shows inconsistent effects at best. It is possible that some antecedent-based interventions may be more effective after a history of exposure to consequence-based procedures such as extinction (perhaps during guided compliance). That is, consistent exposure to extinction or other consequence-based interventions may establish instructions as discriminative stimuli for compliance. Antecedent-based procedures such as

rationales may have an effect on compliance, but only when implemented after a history of exposure to a consequence-based intervention. It is also possible that a combination of antecedent-based interventions would be effective to increase compliance. For example, the use of rationales along with noncontingent access to a preferred item might be evaluated. Future research should examine these possibilities.

As described above, one explanation for the failure of the rationales to increase compliance in this study is that they represented what Malott *et al.* (1997) referred to as incomplete rules. That is, the instruction and rationales specified the required response as well as a reason for engaging in the response but did not specify the consequences involved in engaging in (or failure to engage in) the response. In other words, the lack of an explicit statement of consequences may be at least partly to blame for the failure of the rationale procedure. Future research should examine this in more detail.

The present study should be evaluated in light of a few limitations. First, a restricted set of toys and conditions was used as the context for examining rationales. It is possible that rationales are effective in specific contexts not examined in this study. Second, the external validity of the study might have been weakened by the use of a therapist rather than parents or teachers. Finally, time constraints prevented an extended evaluation of some of the other interventions (e.g., guided compliance). Despite these limitations, this study represents the first empirical investigation of rationales as a means of increasing compliance and might prompt additional research on the topic. In the meantime, current evidence does not support their use to increase compliance.

REFERENCES

- Bernal, M. E., Klinnert, M. D., & Schultz, L. A. (1980). Outcome evaluation of behavioral parent training and client-centered parent counseling for children with conduct problems. *Journal of Applied Behavior Analysis, 13*, 677-691.

- Cote, C. A., Thompson, R. H., & McKerchar, P. M. (2005). The effects of antecedent interventions and extinction on toddlers' compliance during transitions. *Journal of Applied Behavior Analysis, 38*, 235–238.
- Crowther, J. H., Bond, L. A., & Rolf, J. E. (1981). The incidence, prevalence, and severity of behavior disorders among preschool-aged children in day care. *Journal of Abnormal Child Psychology, 9*, 23–42.
- Fisher, W., Piazza, C. C., Bowman, L. G., Hagopian, L. P., Owens, J. C., & Slevin, I. (1992). A comparison of two approaches for identifying reinforcers for persons with severe and profound disabilities. *Journal of Applied Behavior Analysis, 25*, 491–498.
- Forehand, R., Gardner, H., & Roberts, M. (1978). Maternal response to child compliance and noncompliance: Some normative data. *Journal of Clinical Child Psychology, 7*, 121–124.
- Houlihan, D., Jacobson, L., & Brandon, P. K. (1994). Replication of a high-probability request sequence with varied interprompt times in a preschool setting. *Journal of Applied Behavior Analysis, 27*, 737–738.
- Kapalka, G. M. (2007). *Parenting your out-of-control child: An effective, easy-to-use program for teaching self-control*. Oakland, CA: New Harbinger.
- Keenan, K., Shaw, D., Delliquadri, E., Giovannelli, J., & Walsh, B. (1998). Evidence for the continuity of early problem behaviors: Application of a developmental model. *Journal of Abnormal Child Psychology, 26*, 441–454.
- Keenan, K., & Wakschlag, L. S. (2000). More than the terrible twos: The nature and severity of behavior problems in clinic-referred preschool children. *Journal of Abnormal Child Psychology, 28*, 33–46.
- Mace, F. C., & Belfiore, P. (1990). Behavioral momentum in the treatment of escape-motivated stereotypy. *Journal of Applied Behavior Analysis, 23*, 507–514.
- Mace, F. C., Hock, M. L., Lalli, J. S., West, B. J., Belfiore, P., Pinter, E., et al. (1988). Behavioral momentum in the treatment of noncompliance. *Journal of Applied Behavior Analysis, 21*, 123–141.
- Malott, R. W., Whaley, D. L., & Malott, M. E. (1997). *Elementary principles of behavior* (3rd ed.). Upper Saddle River, NJ: Prentice Hall.
- McMahon, R. J., & Forehand, R. (2003). *Helping the noncompliant child: Family-based treatment for oppositional behavior* (2nd ed.). New York: Guilford.
- Nelsen, J. (2006). *Positive discipline*. New York: Random House.
- Roberts, M. W., McMahon, R. J., Forehand, R., & Humphreys, L. (1978). The effect of parental instruction-giving on child compliance. *Behavior Therapy, 9*, 793–798.
- Rodriguez, N. M., Thompson, R. H., & Baynham, T. Y. (2010). Assessment of the relative effects of attention and escape on noncompliance. *Journal of Applied Behavior Analysis, 43*, 143–147.
- Rortvedt, A. K., & Miltenberger, R. G. (1994). Analysis of a high-probability instructional sequence and time-out in the treatment of child noncompliance. *Journal of Applied Behavior Analysis, 27*, 327–330.
- Schaffer, H. R., & Crook, C. K. (1980). Child compliance and maternal control techniques. *Developmental Psychology, 16*, 54–61.
- Wilder, D. A., Chen, L., Atwell, J., Pritchard, J., & Weinstein, P. (2006). Brief functional analysis and treatment of tantrums associated with transitions in preschool children. *Journal of Applied Behavior Analysis, 39*, 103–107.
- Wilder, D. A., Harris, C., Reagan, R., & Rasey, A. (2007). Functional analysis and treatment of noncompliance by preschool children. *Journal of Applied Behavior Analysis, 40*, 173–177.
- Wilder, D. A., Zonneveld, K., Harris, C., Marcus, A., & Reagan, R. (2007). Further analysis of antecedent interventions on preschoolers' compliance. *Journal of Applied Behavior Analysis, 40*, 535–539.
- Zarcone, J. R., Iwata, B. A., Hughes, C. E., & Vollmer, T. R. (1993). Momentum versus extinction effects in the treatment of self-injurious escape behavior. *Journal of Applied Behavior Analysis, 26*, 135–136.
- Zarcone, J. R., Iwata, B. A., Mazaleski, J. L., & Smith, R. G. (1994). Momentum and extinction effects on self-injurious escape behavior and noncompliance. *Journal of Applied Behavior Analysis, 27*, 649–658.

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