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# A Preliminary Comparison of Guided Compliance and High-Probability Instructional Sequences as Treatment for Noncompliance in Children with Developmental Disabilities

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*The efficacy of guided compliance and high-probability instructional sequences was compared with two children referred to an outpatient clinic for treatment of noncompliance. Parents were taught to implement the procedures in their homes, and parent-training outcomes for the two interventions were compared in terms of treatment effectiveness, procedural integrity, and parent satisfaction. Levels of compliance were higher under guided compliance than under high-probability instructional sequences. Nevertheless, parents rapidly learned to implement both treatments with a high degree of accuracy and reported equal satisfaction with the procedures. © 1999 Elsevier Science Ltd*

Noncompliance, which is generally defined as the failure to follow instructions delivered by a parent or caregiver, is a common behavior problem exhibited by

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individuals with developmental disabilities (Walker, 1993). In fact, results of a number of studies suggest that noncompliance is the primary reason that parents of children with developmental disabilities request behavioral services from outpatient clinics and specialized treatment centers (Charlop, Parris, Fenton, & Cataldo, 1987; Fidura, Lindsey, & Walker, 1987). For children with developmental disabilities, failure to follow instructions could result from either skill or motivational deficits, or a combination of both (Handen, Parrish, McClung, Kerwin, & Evans, 1992).

As such, a variety of treatment procedures have been developed to decrease noncompliance in children with disabilities (see Walker, 1993, for a review). Parents and caregivers who are taught to implement these interventions can successfully reduce noncompliance and increase skill acquisition in their children (e.g., Cowert, Iwata, & Poynter, 1984; McDonald & Budd, 1983; Rickert, Sottolano, Parrish, Riley, Hunt, & Pelco, 1988; Robbins & Dunlap, 1992). One method, guided compliance, involves physically guiding the child through the requested response when the child fails to comply with an instruction. Two decades of research has shown that guided compliance is effective in reducing noncompliance in individuals with developmental disabilities (e.g., Adubato, Adams, & Budd, 1981; Parrish, Cataldo, Kolko, Neef, & Egel, 1986; Striefel & Wetherby, 1973; van Hasselt, Sisson, & Aach, 1987; Whitman, Zakaras, & Chardos, 1971). A number of mechanisms may be responsible. First, the physical contact (i.e., physical guidance) that is provided contingent on noncompliance may function as an aversive event, decreasing noncompliance through punishment. Second, physical guidance may function as escape extinction because the child is required to complete the response (i.e., not permitted to escape from the instruction) after noncompliance (Iwata, Pace, Kalsher, Cowdery, & Cataldo, 1990). Finally, if noncompliance is largely the result of a skill deficit, guided compliance may constitute learning trials because the correct response is shown to the child (Handen et al., 1992).

Although guided compliance appears to be a useful treatment for noncompliance, it may not always be the most appropriate strategy in parent training. For example, parents of large or aggressive children who resist the physical interaction necessary to guide the child through the requested action may find it difficult to use guided compliance (Ducharme & Popynick, 1993; Mace et al., 1988). Even parents and caregivers of children who are easy to physically guide may be unable to implement guided compliance consistently due to limited mobility (e.g., resulting from aging, chronic illness, obesity, or other physical disability). Finally, some parents may consider guided compliance to be a relatively intrusive, or restrictive procedure (Miltenberger & Lumley, 1997).

As such, researchers have begun to develop alternatives to guided compliance and other intrusive interventions (e.g., timeout) that have been used to treat noncompliance. In particular, a procedure called high-probability (high-*p*) instructional sequences has been examined in numerous studies during the past 10 years. High-*p* instructional sequences involve the presentation of several in-

structions with which the child is likely to comply (i.e., high- $p$  instructions) prior to the presentation of an instruction with which the child is not likely to comply (low-probability (low- $p$ ) instructions). It has been suggested that reinforcement for compliance with high- $p$  requests helps to establish a “momentum” of compliance, resulting in an increase in compliance with low- $p$  requests. With very few exceptions, results of studies on the high- $p$  treatment indicate that it is extremely effective in reducing noncompliance in individuals with developmental disabilities (e.g., Davis, Brady, Williams, & Hamilton, 1992; Ducharme & Worling, 1994; Horner, Day, Sprague, O’Brien, & Heathfield, 1991; Mace et al., 1988).

Unlike physical guidance, the high- $p$  intervention does not require physical contact between the parent and child to produce treatment effects, and the procedure is considered a nonaversive behavior reduction procedure (Davis & Brady, 1993). As such, high- $p$  instructional sequences appear viable to guided compliance for use in parent-training programs that focus on the treatment of noncompliance in children with developmental disabilities.

Nevertheless, in some cases, guided compliance may be associated with higher levels of compliance than the high- $p$  treatment (Zarcone, Iwata, Hughes, & Vollmer, 1993; Zarcone, Iwata, Mazaleski, & Smith, 1994). Zarcone, et al. (1993), for example, found that escape extinction (i.e., guided compliance) implemented alone or in combination with the high- $p$  treatment was more effective than the high- $p$  treatment alone in decreasing self-injury and noncompliance for an individual who engaged in escape-maintained self-injury. The authors concluded that high- $p$  instructional sequences might be ineffective when noncompliance is accompanied by escape behavior that competes with compliance.

However, it is not clear whether the high- $p$  treatment would be less effective than guided compliance if noncompliance occurred in the absence of other problem behavior because no studies have compared these two common treatments with individuals who engage only in noncompliance. One goal of this study was to compare the efficacy of guided compliance to that of high- $p$  instructional sequences for children receiving treatment for noncompliance through an outpatient clinic that provided short-term parent training (see Charlop et al., 1987). Before the study, therapists in the clinic routinely taught parents to implement guided compliance as part of a standard treatment protocol for noncompliance.

Irrespective of treatment efficacy, the high- $p$  intervention might not be a useful alternative to guided compliance if parents have difficulty learning to implement the procedure correctly with their children. As such, a comparison of these two treatments should include consideration of parent skill acquisition, especially because of the brevity of the services provided by many outpatient clinics. Nevertheless, few studies on the high- $p$  treatment or guided compliance have used parents as therapists or reported parent’s skill acquisition while

learning to implement these procedures, and no studies have compared the two interventions in terms of parent skill acquisition or satisfaction.

Thus, the goal of this study was to teach parents both procedures as part of short-term parent training through an outpatient clinic and to compare the outcome on multiple levels (i.e., treatment effectiveness, parents' skill acquisition, and parents' satisfaction).

## METHODS

### *Participants and Setting*

Participants were two children referred to an outpatient clinic for treatment of noncompliance and their mothers. The outpatient clinic was affiliated with a pediatric hospital for children with developmental and physical disabilities. Walter was a 4-year-old boy diagnosed with autism and moderate mental retardation. Paul was a 5-year-old boy diagnosed with pervasive developmental disorder (not otherwise specified) and mild mental retardation. Neither child had sensory or motor impairments. Results of parent interviews and observation of parent-child interaction before the study indicated that the children were noncompliant, but did not exhibit other problem behaviors (e.g., aggression, disruption, tantrums) during instructional situations. Walter's mother (Cathy) was a 23-year-old, unmarried, unemployed person. Paul's mother (Jenny) was 34 years old, married, and worked as a waitress. Both parents had a high-school diploma. Sessions were conducted by the participants' mothers in the family rooms of their homes. The family rooms contained a variety of items, including couches, chairs, tables, and books.

### *Response Measurement and Reliability*

Trained observers used laptop computers to collect data on child compliance and parent's use of treatment. *Compliance* was defined as initiation of the requested action within 10 s of instruction delivery, and completion of the request within 30 s of initiation after either verbal or gestural prompts. An *instruction* was defined as the initial delivery of a high-*p* or low-*p* request during an instructional trial and was scored as correct if it was clear, presented in the form of a command rather than a question, not repeated more than once per trial, and (for low-*p* requests during the high-*p* procedure) presented within 10-s of the final high-*p* request in a sequence. A *prompt* was defined as a response designed to evoke compliance to a request, including gestures (e.g., pointing to an object; modeling the response) and physical guidance (guiding the child to complete the request by using hand-over-hand motion). Prompt sequences were scored as correct if the parent: 1) issued gestural and physical prompts using a least-to-most intrusive, 3-step prompt hierarchy; 2) presented a prompt when the child did not initiate compliance within 5 s of an initial instruction or a less

intrusive prompt; and 3) implemented full physical guidance as the third step in the prompt hierarchy when the child did not initiate compliance following a less intrusive prompt. A *high-p instructional sequence* was defined as the presentation of at least three consecutive high-*p* requests and was scored as correct if the parent delivered the instructions no more than 5-s apart, issued at least three high-*p* requests prior to a low-*p* request, presented additional high-*p* requests until the child complied with at least one high-*p* request if the child did not comply with the third high-*p* request in a sequence, and ignored noncompliance. A *consequence for compliance* was defined as any parent response directed toward the child within 5 s of compliance and was scored as correct if it involved praise (e.g., “Good job!” “I like that.”). Data on child compliance with high-*p* and low-*p* requests were expressed as percentage of compliance. Data on parent correct use of procedures were expressed as percentage of opportunities.

A second observer independently scored occurrences of parent and child behavior during 37% of sessions, and the data records were compared using exact agreement method calculations. Each session was partitioned into consecutive 10-s intervals, and the number of exact agreements on the frequency of behavior was divided by the sum of agreements plus disagreements and multiplied by 100%. Mean interobserver agreement was 98% for compliance (range, 92% to 100%) and 96% for correct use of procedures (range, 91% to 100%).

### *Compliance Assessment*

Before the study, the parent generated a list of potential high-*p* and low-*p* instructions. The parent then was prompted to deliver each request to the child on a fixed-time (FT) 60-s schedule and to provide no consequences for compliance or noncompliance. The child was exposed to four trials with each request. Percentage of compliance with each instruction was calculated to identify high-*p* and low-*p* requests. High-*p* requests were defined as those with which the children complied 75% or more of the time, and low-*p* requests were defined as those with which the children complied 25% or less of the time. Four high-*p* instructions were identified for each participant (e.g., “Give me a hug;” “Put the tape in the VCR”). Eight low-*p* requests were identified for Walter (e.g., “Put your cup in the sink;” “Sit down in the chair.”), and six low-*p* requests were identified for Paul (e.g., “Close the door;” “Hand me the book”).

### *Experimental Conditions*

The low-*p* instructions were arbitrarily divided into two sets for each participant. Instruction set no. 1 was assigned to the guided compliance condition, and instruction set no. 2 was assigned to the high-*p* treatment condition. Two to four sessions were conducted 1 day per week. During all baseline and treatment sessions, the therapist instructed the parent to deliver low-*p* requests on a FT

60-s schedule. All low-*p* requests from a particular set were delivered two (Walter) or three (Paul) times each session, for a total of eight or nine trials per session.

*Baseline.* The parent was instructed to deliver low-*p* requests in random order from either set no. 1 or set no. 2 and to respond to her child's behavior as she normally did. These sessions were conducted so that data on both child and parent behavior could be collected before parent training.

*Parent training.* After the completion of baseline, the therapist taught the parent how to implement guided compliance and high-*p* instructional sequences during two separate visits to the parent's home. For the guided compliance procedure, the parent was instructed to deliver clear, direct requests; to wait 5 s for child compliance after an initial instruction or gestural prompt; to deliver a gestural prompt if the child did not comply to the initial instruction within 5 s; to deliver physical guidance if the child did not comply to the gestural prompt within 5 s; and to praise the child within 5 s of compliance. For the high-*p* treatment, the parent was instructed to deliver at least three high-*p* instructions in varied order before each low-*p* instruction; to wait 5 s for child compliance after each high-*p* instruction; to deliver additional high-*p* instructions until the child complied with one high-*p* instruction if the child did not comply with the last high-*p* request in the sequence; to deliver the low-*p* instruction within 10-s of the final high-*p* instruction in the sequence; to ignore noncompliance to low-*p* and high-*p* requests; and to deliver praise within 5 s of compliance to low-*p* or high-*p* requests.

The parent-training technique used by the therapist was identical for both procedures. First, the parent was given a handout that described all steps of the procedure, and the therapist reviewed the written instructions with the parent. Next, the therapist demonstrated the procedure by delivering three low-*p* instructions from the designated set (i.e., set no. 1 for guided compliance, and set no. 2 for high-*p* instructional sequences) to the parent. Before each trial, the parent was told to either comply or not comply with the request so that the therapist could model all correct responses. The therapist then modeled the procedure again by delivering three low-*p* instructions from the designated set to the child. Finally, the parent was asked to rehearse the procedure by delivering three low-*p* instructions from the designated set to the child, and the therapist provided feedback after each trial. The parent was told to practice the procedures with the child using the designated instructions for each treatment, and a worksheet was provided to the parent to help structure and prompt these practice sessions.

*Treatment comparison.* After the initial parent training session for each intervention, the parent was asked to implement treatment sessions with either guided compliance or high-*p* instructional sequences, and the therapist provided

**TABLE 1**  
**Parent Satisfaction Questionnaire**

How effective was guided compliance in increasing your child's compliance?				
1	2	3	4	5
Not Effective	Somewhat Effective	Moderately Effective	Highly Effective	Extremely Effective
How effective was the high- <i>p</i> treatment in increasing your child's compliance?				
1	2	3	4	5
Not Effective	Somewhat Effective	Moderately Effective	Highly Effective	Extremely Effective
How easy did you find it to use guided compliance?				
1	2	3	4	5
Extremely Easy	Easy	Somewhat Difficult	Difficult	Extremely Difficult
How easy did you find it to use the high- <i>p</i> treatment?				
1	2	3	4	5
Extremely Easy	Easy	Somewhat Difficult	Difficult	Extremely Difficult
How much did you like the guided compliance strategy?				
1	2	3	4	5
Disliked A Lot	Disliked	Somewhat Liked	Liked	Liked A Lot
How much did you like the high- <i>p</i> strategy?				
1	2	3	4	5
Disliked A Lot	Disliked	Somewhat Liked	Liked	Liked A Lot

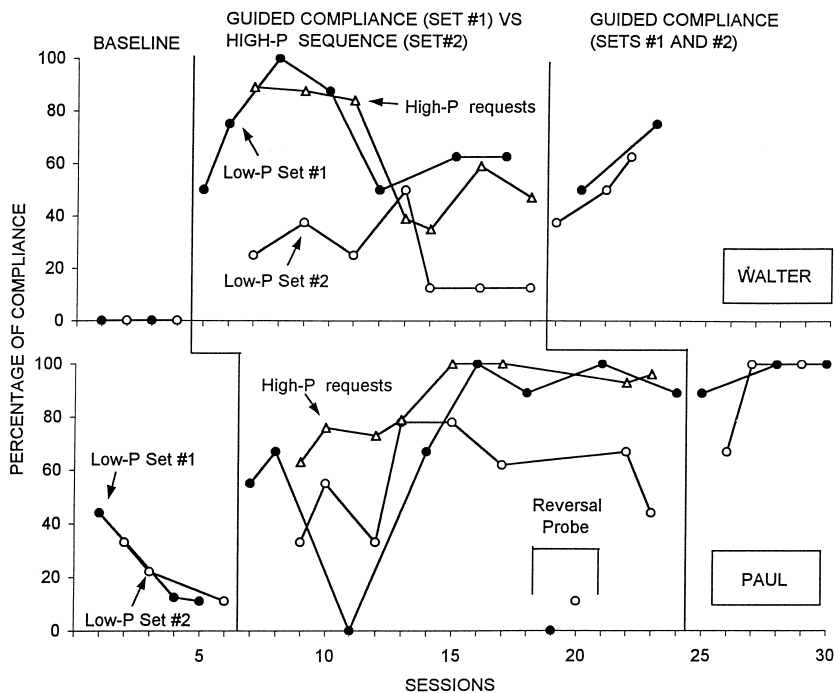
feedback to the parent after each session. Toward the end of the treatment comparison phase, a reversal probe was implemented with Paul, during which only low-*p* instructions were delivered (compliance and noncompliance were ignored). In the final phase, guided compliance was implemented with both instruction sets. The parents then completed a satisfaction questionnaire that included separate items for each procedure. The questionnaire, modified from that developed by Forehand and McMahon (1981), is shown in Table 1. The therapist read each item and its corresponding 5-point rating scale aloud to the parent and recorded her verbal responses on the form.

### *Experimental Design*

Multi-element and multiple baseline across subjects designs were used to examine and compare the effects of treatment on child compliance.

## **RESULTS**

Results for the two children are displayed in Figure 1. Data on percentage of compliance with high-*p* and low-*p* requests are shown in the top panel for



**FIGURE 1.** Percentage of compliance with low-*p* and high-*p* requests for Walter (top panel) and Paul (bottom panel) during baseline and treatment.

Walter and in the bottom panel for Paul. During baseline, Walter never complied with low-*p* requests, and Paul complied with few low-*p* requests from either instruction set ( $M = 23\%$  for set no. 1, and  $M = 22\%$  for set no. 2). Both interventions produced an increase in compliance with low-*p* requests during the treatment comparison phase. However, compliance was higher under guided compliance ( $M = 70\%$  for Walter, and  $M = 71\%$  for Paul) than under the high-*p* treatment ( $M = 25\%$  for Walter, and  $M = 56\%$  for Paul). The reversal probe was associated with a substantial decrease in Paul's compliance with low-*p* requests from both sets (0% for set no. 1, and 11% for set no. 2). In the final phase, compliance with requests from set no. 2 increased for both children when treatment was switched from the high-*p* treatment to guided compliance.

Results for the parents are shown in Figure 2. Data on correct treatment implementation were averaged across the separate components of each intervention because the percentages were uniformly high for all components. The top panel shows the average percentage of correct treatment components implemented by Cathy (Walter's mother) for guided compliance and high-*p* instructional sequences, and the bottom panel shows the results for Jenny (Paul's mother). During baseline, Cathy and Jenny rarely implemented any



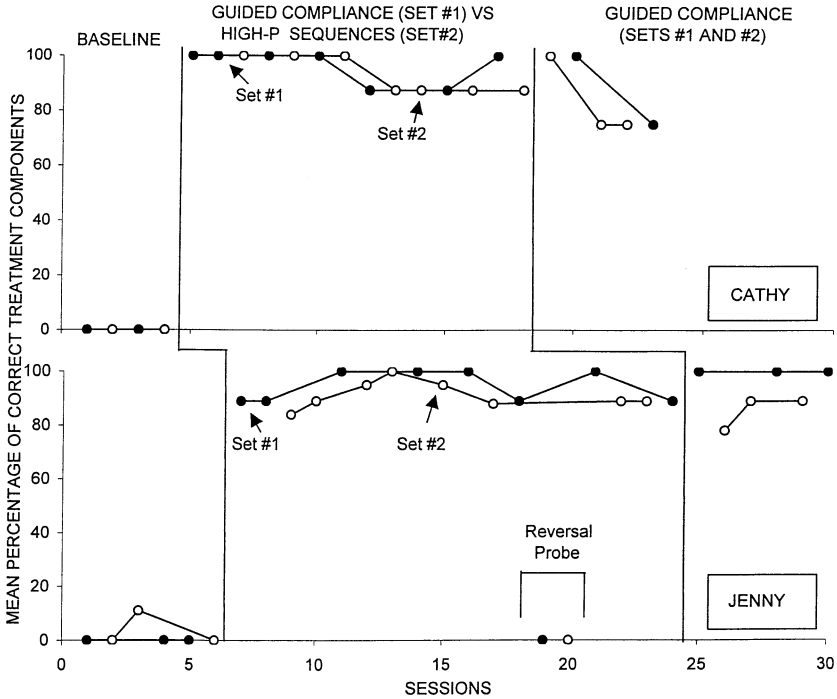


FIGURE 2. Percentage of correct treatment components implemented by Cathy (top panel) and Jenny (bottom panel) during baseline and treatment.

components of the interventions. After the initial parent-training session for each procedure, the mothers correctly implemented both guided compliance ( $M = 96\%$  and  $94\%$  correct for Cathy and Jenny, respectively) and the high- $p$  instructional sequence ( $M = 93\%$  and  $91\%$  correct for Cathy and Jenny, respectively) across the treatment comparison. When parents were told to implement guided compliance with set no. 2 in the final phase, they immediately did so with a high (but somewhat lower) degree of accuracy ( $M = 83\%$  for Cathy, and  $M = 85\%$  for Jenny).

Parents reported equal satisfaction with the procedures on the questionnaire. The parents rated both procedures as moderately effective (i.e., “4”) in increasing noncompliance and as extremely easy to implement (i.e., “1”). In addition, both parents reported that they liked the procedures (i.e., “4”).

### DISCUSSION

Results of this preliminary study extend those of Zarcone et al. (1993, 1994) by showing that guided compliance may be associated with higher levels of compliance than high- $p$  instructional sequences for children who engage in

noncompliance only. The findings also suggested that parents can be taught to implement either treatment quickly and efficiently during short-term parent training and that parents may consider the procedures to be equally acceptable for treating noncompliance. Thus, even though the high-*p* intervention may be less effective than guided compliance for some children, high-*p* instructional sequences may be one alternative for parents who are unable or unwilling to implement guided compliance while receiving behavioral services through an outpatient clinic.

The relative ineffectiveness of the high-*p* intervention was somewhat unexpected because, with few exceptions (e.g., Zarcone et al. 1993), results of previous studies have found the high-*p* instructional procedure to be extremely successful in reducing noncompliance (e.g., Davis et al., 1992; Horner et al., 1991; Mace et al., 1988). However, these findings must remain tentative due to several limitations. First, it is not clear whether results would generalize to other individuals because only two sets of children and parents participated. In fact, the outcome could be idiosyncratic for these participants. A more definitive comparison of these interventions will require additional research with larger numbers of children. Second, the outcome may have been influenced by interaction effects because of the rapid alternation of guided compliance with the high-*p* procedure. For example, the high-*p* intervention might have produced higher levels of compliance if it had been implemented in the absence of guided compliance. This potential problem should be explored in further studies by using a reversal design to compare the two treatments.

The contribution of the findings to the current literature also is limited because the mechanisms responsible for the differential treatment effects were not examined. Possibly, the physical contact provided contingent on noncompliance during guided compliance was fairly aversive for these participants, such that noncompliance decreased rapidly through punishment. In addition, Walter's compliance with high-*p* requests decreased across the treatment comparison, an outcome that has been observed in previous studies (e.g., Rortvedt & Miltenberger, 1994; Zarcone et al., 1993) and that could account for the relative ineffectiveness of the high-*p* treatment. Nevertheless, Walter complied with few low-*p* requests during the first 3 weeks of treatment, even though he complied with nearly every high-*p* request. As such, the decrease in compliance to high-*p* instructions may not be solely responsible for the overall difference in treatment effectiveness.

Explanations for the outcome likely would be clearer if a functional analysis of the children's noncompliance had been conducted prior to treatment. Results of numerous studies indicate that functional analyses of inappropriate behavior (e.g., aggression, self-injury) are important for identifying effective treatments (Iwata et al., 1994). Although few studies have examined functional analyses of noncompliance, it has been suggested that noncompliance in individuals with developmental disabilities probably is maintained by either escape from instructions or attention from caregivers (see Walker, 1993). These maintaining vari-

ables may provide the basis for the relative efficacy of guided compliance and high-*p* instructional sequences.

Parents implemented both procedures with a high degree of integrity, indicating that parent behavior was not responsible for the difference in treatment effectiveness. The high level of accuracy observed after just one parent-training session for each procedure was not anticipated. The two initial training sessions were relatively brief (lasting approximately 60 min each), and neither parent had received behavioral services for her child's problem behavior before the study. Such rapid skill acquisition prevented the planned comparison of the parents' learning curves across treatment.

Although guided compliance produced higher levels of compliance than the high-*p* treatment, the parents rated both procedures as "moderately effective" on the satisfaction questionnaire during the final visit. A number of factors could account for the equal ratings. For example, the parents may have considered the children's overall compliance levels (i.e., with both high-*p* and low-*p* instructions) when rating the high-*p* treatment. Alternatively, the parents may not have perceived a difference in levels of compliance with low-*p* instructions under the two treatments. Finally, their responses on the questionnaire may have been biased for a number of reasons (see McMahon & Forehand, 1983). Thus, although parents also reported that they liked the procedures and found them easy to implement, results of the satisfaction questionnaire are somewhat difficult to interpret. In further studies, direct measures of preference might provide a useful supplement to more traditional measures of consumer satisfaction. For example, parents could be given opportunities to choose which treatment that they would prefer to implement after parent training is completed, and the percentage of choices allocated to a particular intervention would serve as a behavioral measure of preference.

Thus, results of this preliminary study provide a number of interesting directions for further research. Additional comparison studies are needed to identify conditions that may influence treatment outcomes under the two procedures. Such factors include the function of noncompliance (e.g., Zarcone et al., 1993) and specific components of the high-*p* treatment (e.g., reinforcer quality; Mace, Mauro, Boyajian, & Eckert, 1997) that may alter its effectiveness relative to guided compliance. In addition, further comparison studies should focus on the acquisition and maintenance of parent behavior, as well as methods to assess parent preferences, given the pivotal role of parents and caregivers in the treatment of children's problem behavior.

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