

*AN ASSESSMENT OF ANTECEDENT EVENTS
INFLUENCING NONCOMPLIANCE IN AN OUTPATIENT CLINIC*

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Several studies have shown that various factors can influence noncompliance, including task novelty, rate of presentation, and task preference. This study examined the impact of selected antecedent variables on noncompliance in an outpatient clinic setting. In two experiments involving 6 typically developing children, the consequences for noncompliance remained constant. During Experiment 1, demands that included noncontingent access to adult attention were contrasted with the same demands that did not include attention within a multielement design. In Experiment 2, demands were altered by decreasing the difficulty or amount of work or providing access to attention. In both experiments, results indicated idiosyncratic responses to the manipulated variables, with decreases in noncompliance observed following introduction of one or more antecedent variables with 5 of the 6 participants. These results suggested that noncompliance can be reduced via changes in antecedent variables, including adding potential positive reinforcers to the task situation, and that it is possible to probe variables that alter noncompliance in an outpatient clinic setting.

DESCRIPTORS: brief outpatient assessments, establishing operations, noncompliance

Noncompliance in children is a relatively frequent problem (Taplin & Reid, 1977) that occurs across subgroups, settings, and task requirements (Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991; McComas, Lalli, & Benavides, 1999). Previous studies indicate that noncompliance is often a challenging behavior (Johnson, Wahl, Martin, & Johansson, 1973; Patterson & Reid, 1973; Tavormina, Henggeler, & Gayton, 1976; Wehman & McLaughlin, 1979) not only because it can be resistant to treatment but also because it may be a member of a larger class of problem behavior (Parrish, Cataldo, Kolko, Neef, & Egel, 1986; Reimers et al., 1993; Wahler, 1975). Both the prevalence and the severity of noncompliance have made it a relatively common target for be-

havioral intervention (Baer, Rowbury, & Baer, 1973; Cooper et al., 1992; Ducharme & Worling, 1994; Dunlap et al.; Jason & Liotta, 1982; Strain, Lambert, Kerr, Stagg, & Lenkner, 1983).

Several antecedent variables have been shown to influence noncompliance, with previous studies usually focusing on dimensions of the task itself (McComas, Hoch, Paone, & El-Roy, 2000; Richman et al., 2001; Smith, Iwata, Goh, & Shore, 1995). In these studies, variables such as task novelty, session duration, task-presentation rate, task difficulty, choice of task sequence, or repetition of tasks were manipulated while the consequence for the target behavior (negative reinforcement) was held constant. One reason that these antecedent variables may affect noncompliance is that they might function as motivating operations, altering the effectiveness of the reinforcers that maintain an individual's noncompliant behavior (Laraway, Snyckerski, Michael, & Poling, 2003; Piazza, Contrucci, Hanley, & Fisher, 1997).

Another set of antecedent variables that

We thank Andrew Gardner for his assistance with developing and collecting data for this project as well as Agnes DeRaad and Jennifer McComas for their input.

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may influence noncompliance is restricted access to positive reinforcement that can occur when a task is presented (e.g., Piazza *et al.*, 1997). Previous research has shown that including positive reinforcement in task situations can reduce problem behavior during demands (e.g., Lalli *et al.*, 1999). However, although Lalli *et al.* demonstrated that positive reinforcement of compliance could result in reductions in problem behavior, it remains unclear whether those reductions were a result of the response–reinforcer relation (reinforcement of compliance) or an increase in the amount of ambient reinforcement available in the task situation (a change in the establishing operation).

The purpose of the current study was to develop a brief assessment methodology that examined the influence of specific antecedent variables on the noncompliant behavior of young, typically developing children in an outpatient setting. This population and setting were chosen because noncompliance is one of the most frequent complaints from parents of young, typically developing children (Gordon, Schroeder, & Hawk, 1992; Hagekull & Bohlin, 1992). Because noncompliance seldom necessitates more intensive treatment (e.g., inpatient admission), children who exhibit noncompliance are usually evaluated in outpatient clinics. The limitations of an outpatient clinic dictate that an assessment must be completed in a brief time (e.g., Cooper *et al.*, 1992). Experiment 1 evaluated whether continuous attention during demand situations could alter noncompliance. During Experiment 2 the effects of task difficulty, task amount, and presence of attention on noncompliance were evaluated.

METHOD

GENERAL PROCEDURE

Participants and Setting

Participants were typically developing children who were regularly scheduled pa-

tients of an outpatient clinic that provided brief functional analyses of behavior problems and treatment recommendations to parents and local service providers (see Cooper *et al.*, 1992, for a description of the clinic). All procedures were conducted in the regular clinic rooms and were observed via closed-circuit television. The current investigation was incorporated into the standard evaluations conducted by the clinic.

Materials

The materials used during the assessment included a desk, several chairs, and a number of leisure items and task materials. Leisure items included age-appropriate toys (e.g., blocks, Legos®, coloring books and crayons, etc.). Task materials were selected based on a task-difficulty assessment and included academic tasks (e.g., math worksheets, writing tasks, etc.), preacademic tasks (e.g., sorting tasks, matching items by color, puzzles, etc.), and nonacademic or vocational tasks (e.g., folding towels, picking up toys).

For most participants, the task-difficulty assessment was based on the participant's written responses during administration of the arithmetic subtest of the Wide-Range Achievement Test (3rd ed.; WRAT-3). This subtest consists of a series of arithmetic problems arranged sequentially in order of increasing difficulty. For most participants, difficult tasks were defined as math problems that contained the same mathematical operations and the same number of digits in the problems and solutions as the last (i.e., most difficult) item completed correctly on the WRAT-3. Easy tasks were defined as math problems that contained the same mathematical operations and the same number of digits in the problems and solutions as the third to last of all the items completed correctly. Two participants (Daisy and Andy) were unable to complete the easiest problems on the WRAT-3. For these 2 partici-

pants, a hierarchy of preacademic tasks (including writing letters, counting objects, and completing a series of puzzles with a decreasing number of pieces) was presented in order of decreasing difficulty as determined by parent or teacher interview. The most difficult task completed correctly from this hierarchy of tasks was designated as a difficult task. The task immediately below this difficult task on the hierarchy of tasks was designated as an easy task after demonstrating that the participant could complete the task with 100% accuracy.

Response Definitions

For the purposes of this study, noncompliance consisted of either of two response topographies: off-task behavior and problem behavior (i.e., aggression, destruction, tantrums, etc.). This definition excluded the possibility of scoring compliance when a participant was engaged in a task while simultaneously engaging in problem behavior and is consistent with previous definitions of noncompliance from evaluations in outpatient clinics (e.g., Cooper et al., 1992). Problem behavior included aggression, destruction of materials, and tantrums and was specifically defined for each participant.

To compare levels of noncompliance across all functional analysis conditions, each condition contained an instruction and specific definitions of off-task behavior were generated for each condition. During demand conditions, the instruction was to complete a task that was identified for each participant based on results of the task-difficulty screening. Off-task behavior during demand conditions was defined as directing one's gaze toward non-task-related materials, asking irrelevant questions, or engaging in non-task-related activities. Examples of off-task behavior during the demand condition were sitting passively while looking away from the task, leaving the work area, playing with leisure items, and so on. The instruc-

tion in the free-play condition was to interact appropriately with leisure materials or with one's care providers. Off-task behavior during the free-play condition was defined as failure to interact with care providers or materials. An example of off-task behavior in the free-play condition was sitting in a corner facing away from care providers and not interacting with leisure items. The instruction during the diverted attention/contingent attention condition was to play alone. Off-task behavior was defined as verbally interacting with or making physical contact with one's care providers. An example of off-task behavior in the diverted attention/contingent attention condition was asking one's care providers to play while tugging on their clothing. Table 1 summarizes the antecedent variables, specific instructions, and consequences for compliance and noncompliance for each condition included in both experiments. For all conditions, noncompliance was quantified by dividing the total number of intervals in which a child was off task or engaged in problem behavior by the total number of intervals of the session and multiplying that number by 100%.

Data Collection and Interobserver Agreement

Observations were conducted via closed-circuit video monitoring. The therapy room was equipped with a video camera, and a separate observation room was equipped with a video monitor for unobtrusive observation of participants. Observers recorded target behavior using a 10-s partial-interval recording system. A second observer simultaneously and independently collected interobserver agreement data. An agreement consisted of both raters scoring either the occurrence or the nonoccurrence of target behavior in a given interval. Agreement data were calculated by dividing the total number of agreements by the number of agreements

Table 1
Antecedents, Tasks, and Consequences in Experiments 1 and 2

Condition	Antecedent variables	Instruction	Consequence for noncompliance	Consequence for compliance
Free play	Toys and attention	Play with toys or parents	Block or ignore	Continue playing
Diverted attention/ contingent attention	Toys and no attention	Play with toys alone	Attention (20 s of mild reprimand)	Continue playing
Demand plus escape	Task demand	Work on difficult task	Break from task (including leisure items and prompting)	Continue working while ignored
Demand plus attention plus escape	Task demand and attention (praise and encouragement)	Work on difficult task	Break from task (including leisure items and prompting)	Continue working with attention
Demand (decreased difficulty) plus escape	Task demand	Work on easy task	Break from task (including leisure items and prompting)	Continue working while ignored
Demand (decreased amount) plus escape	Task demand	50% of difficult task	Break from task (including leisure items and prompting)	Continue working while ignored
Demand (decreased difficulty plus attention) plus escape	Task demand and attention (praise and encouragement)	Work on easy task	Break from task (including leisure items and prompting)	Continue working while ignored

plus disagreements and multiplying by 100%.

Design and Procedure

Data for Experiment 1 were collected in a brief multielement design, as described by Cooper *et al.* (1992). Data for Experiment 2 were collected in a two-phase brief multielement design.

All sessions lasted 5 min. When two or more demand sessions were conducted consecutively, these sessions were separated by 2 min of free play, during which the child had continuous access to parental attention and preferred items and no demands were made. Participants' parents served as therapists throughout the assessment and were coached by the investigators prior to each session on the instructions to deliver to their child and

the consequences to provide for compliance and noncompliance. Coaching occurred in the hallway outside the therapy room prior to each condition. Parents were always alone in the room with their child throughout each assessment condition.

The consequence for noncompliance was held constant across all demand conditions. Noncompliance in the form of problem behavior always resulted in signaled 20-s to 30-s breaks from the instruction (e.g., "take a break"). Off-task behavior also resulted in breaks from instructions; however, these breaks were not specifically signaled or delivered by the parent because an automatic consequence of off-task behavior was task avoidance. Breaks from instruction, whether signaled or automatic, included access to leisure items and attention in the form of con-

tinued prompting to work. These potential positive reinforcers were provided during breaks in an effort to make the sessions as analogous to demand situations in the classroom and home settings as possible.

EXPERIMENT 1

METHOD

Participants

Two children participated in Experiment 1. Moira was 6 years 4 months old and had received no previous diagnoses. The primary behaviors of concern were noncompliance and tantrums, defined as crying or screaming (making any vocal noise that was louder than a conversational voice). Results of the task-difficulty assessment showed that a difficult task was completing math problems that required her to add a two-digit number to a single-digit number without carrying and with a sum less than 100.

Nick was 7 years 8 months old and had received no previous diagnoses. The primary behaviors of concern exhibited by Nick were noncompliance, tantrums (defined as any vocal noise that was louder than a conversational voice), and aggression (defined as forceful contact of any part of Nick's body with the parent's body). Results of the task-difficulty assessment showed that a difficult task for Nick was completing math problems that required him to add a two-digit number to another two-digit number with carrying and a sum greater than 100.

Interobserver Agreement

For Moira, agreement data were collected during 27% of the sessions with a mean agreement of 99% (range, 97% to 100%). For Nick, agreement data were collected during 50% of the sessions with a mean agreement of 94% (range, 86% to 100%).

Specific Procedure

Free play (control). During this condition, access to preferred tangible items and adult

attention was continuous and noncontingent. The instruction during this condition consisted of engaging in leisure activities with one's parents. The parents ignored noncompliance in the form of minor inappropriate and off-task behavior and neutrally blocked noncompliance in the form of problem behavior such as aggression or potentially destructive behavior.

Demand plus escape. The parent instructed the child to complete a difficult task as identified in the task-difficulty assessment. Compliance resulted in the parent diverting his or her attention while the child worked. If the child completed the task, another task was presented with as little prompting or attention as possible. Noncompliance that consisted of problem behavior resulted in a parent-initiated brief (20-s to 30-s) break that was signaled by the parent instructing him or her to "take a break" and removing task materials from the desk. During the break, the parent delivered verbal prompting to complete the task (e.g., "You can do this"; "Come on, let's try [the task]") on a variable-time (VT) 10-s schedule. Free-play items remained available during breaks. After a break, task materials were re-presented or the child was directed back to the work area. Noncompliance that consisted of off-task behavior (e.g., looking around, leaving the work area to play with leisure items, passively refusing to work, etc.) resulted in delivery of verbal prompting on a VT 10-s schedule.

Demand plus attention plus escape. This condition was identical to the demand plus escape condition except that parental attention was provided continuously during the demand. The parent delivered noncontingent attention to the child in the form of praise and encouragement but not assistance.

Diverted attention/contingent attention (Moira). This condition was conducted with Moira to determine whether attention was a maintaining variable for her inappropriate

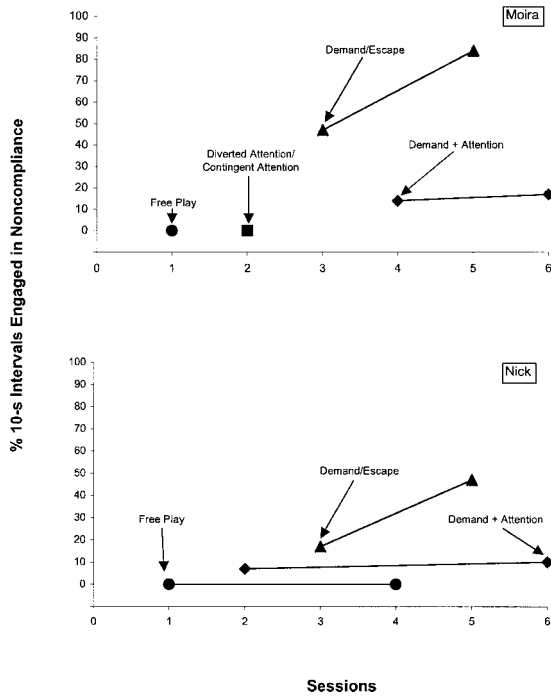


Figure 1. Percentage of sessions in which noncompliance occurred during free play (circles), diverted attention/contingent attention (squares), demand plus escape (triangles), and demand plus attention plus escape (diamonds).

behavior. During this condition, the instruction consisted of telling her to engage in solitary play while her parents diverted their attention to an alternate activity (reading a magazine, speaking to one another, etc.). The task was delivered in the form of a verbal prompt at the beginning of the session (e.g., "Play alone while we read magazines"). Throughout this condition, Moira had continuous access to preferred activities and play items. Both forms of noncompliance resulted in 20 s of attention from Moira's parents in the form of a mild reprimand.

RESULTS AND DISCUSSION

Results from Moira's analysis are presented in the top panel of Figure 1. Moira engaged in a higher percentage of noncompliance during the demand plus escape condition ($M = 65.5\%$; range, 47% to 87%) than

during the free-play and diverted attention/contingent attention conditions (noncompliance did not occur during either of these latter two conditions). Given that no problem behavior occurred during the diverted attention/contingent attention condition, it seems unlikely that noncompliance was maintained by contingent access to attention. During the demand plus attention plus escape condition, the percentage of noncompliance ($M = 15.5\%$; range, 14% to 17%) was substantially lower than in the demand plus escape condition. Because the consequence for noncompliance was identical for these two demand conditions, the antecedent presentation of attention during the demand appears to have altered the value of the break.

Results from Nick's analysis are presented in the bottom panel of Figure 1 and are similar to those obtained for Moira. Nick engaged in noncompliance during a greater percentage of the demand plus escape condition ($M = 32\%$ of observed intervals; range, 17% to 47%) than during the free-play condition, in which he engaged in no noncompliance. Nick also engaged in a lower percentage of noncompliance in the demand plus attention plus escape condition ($M = 8.5\%$; range, 7% to 10%) compared to the demand plus escape condition.

The addition of attention to a difficult demand resulted in decreases in noncompliance for both participants. Overall, results of Experiment 1 extended the results of Lalli et al. (1999) in that noncompliance decreased with changes in the antecedent variable of parental attention. These results are consistent with a motivating operation interpretation because noncompliance always resulted in the same consequence (i.e., brief periods of escape or avoidance, brief attention, and access to preferred items). These results also replicated previous findings (Cooper et al., 1992; Reimers et al., 1993) in demonstrating that assessments of noncompliance

can be conducted via brief multielement designs in an outpatient clinic with typically developing children. In Experiment 2, these findings were extended to include a direct assessment of the effects of task variables (i.e., amount and difficulty) as well as adult attention on noncompliance in 4 children.

EXPERIMENT 2

METHOD

Participants

Daisy was 4 years 1 month old and had received no previous diagnoses. The primary behaviors of concern were noncompliance, aggression (defined as forceful contact of any part of Daisy's body with the body of someone else or the closure of Daisy's mouth on any part of someone else's body), and tantrums (defined as any vocal noise that was louder than a conversational voice). The screening of preacademic tasks showed that a difficult task for Daisy was completing an eight-piece puzzle without assistance. An easy task was completing the same puzzle with assistance in the form of visual prompts as to where to put the puzzle piece.

Andy was 6 years 9 months old and had received no previous diagnoses. The primary behaviors of concern were noncompliance and aggression (defined as forceful contact of any part of Andy's body with the body of someone else). Results of the task-difficulty assessment showed that a difficult task for Andy was writing his name. An easy task was tracing letters of the alphabet made of dotted lines.

Zach was 8 years 2 months old and had received no previous diagnoses. The primary behaviors of concern were noncompliance and aggression (defined as forceful contact of any part of Zach's body with the body of someone else). Results of the task-difficulty assessment showed that a difficult task for Zach was completing arithmetic problems

that required adding two single-digit numbers together with a sum less than or equal to 10. An easy task was completing a worksheet that required him to count and mark the number of symbols that corresponded with the numeral at the top of the page.

Jacob was 5 years 9 months old and had received no previous diagnoses. The primary behaviors of concern were noncompliance, tantrums (consisting of crying, screaming, or raising his voice above a conversational level), and inappropriate language. Results of the task-difficulty assessment showed that a difficult task for Jacob was completing arithmetic problems that required him to add two single-digit numbers together with a sum greater than 10. An easy task was completing a worksheet that required him to count and mark the number of shapes that corresponded with the numeral at the top of the page.

Interobserver Agreement

For Daisy, agreement was conducted during 55% of the sessions with a mean agreement of 96% (range, 85% to 100%). For Andy, agreement was conducted during 33% of the sessions with a mean agreement of 91% (range, 62% to 100%). For Zach, agreement was conducted during 55% of the sessions with a mean agreement of 96.8% (range, 90% to 100%). For Jacob, agreement was conducted during 62% of the sessions with a mean agreement of 95% (range, 78% to 100%).

Procedure

Experiment 2 was conducted in two phases, both of which employed a brief multielement design. Phase 1 consisted of a brief analysis designed to demonstrate that noncompliance occurred when a difficult task was presented without attention. Conditions in this phase always included a control condition (i.e., free play) and a demand plus escape condition. Phase 2 added brief anal-

yses of the effects of decreased amount of demands, decreased difficulty of demands (Zach, Jacob, and Andy), and decreased difficulty of demands plus attention (Daisy and Jacob). All other procedures were identical to Experiment 1.

Phase 1

Free play, demand plus escape, and diverted attention/contingent attention (Daisy and Zach). These conditions were identical to the corresponding conditions in Experiment 1.

Phase 2

Demand (decreased amount) plus escape. The child's care providers instructed him or her to complete a difficult task. The task was identical to that used in the demand plus escape condition, with the exception that the participant was told to complete only 50% of the original task. No differential consequences were delivered for task completion. Consequences for noncompliance were the same as those in the demand plus escape condition. In some cases in which the participant was continuously on task, it was possible for these sessions to be less than 5 min in length.

Demand (decreased difficulty) plus escape (Zach, Jacob, and Andy). The child's parent instructed him or her to complete an easy task (as identified in the task-difficulty assessment). No differential consequences were delivered for task completion. Consequences for noncompliance were the same as those in the demand plus escape condition.

Demand plus attention plus escape. This condition was identical to the corresponding condition from Experiment 1.

Demand (decreased difficulty plus attention) plus escape (Jacob and Daisy). Jacob's and Daisy's parents instructed them to complete an easy task (as identified in the task-difficulty assessment). In addition, their care providers delivered noncontingent attention in the form of assistance as well as praise and

encouragement. No differential consequences were delivered for task completion. Consequences for noncompliance were the same as those in the demand plus escape condition.

RESULTS AND DISCUSSION

Results from Daisy's analysis are presented in the top panel of Figure 2. During Phase 1, Daisy engaged in higher levels of noncompliance during the demand plus escape sessions (34%, 47%) than in the free-play condition (7%, 0%). In addition, relatively high levels of noncompliance occurred during the second session of the diverted attention/contingent attention condition (34% of observed intervals), indicating that noncompliance may have been maintained by contingent access to attention or a combination of attention and escape from demands. In Phase 2, Daisy's noncompliance during the demand plus escape condition increased further (53%, 80%). The levels of noncompliance were somewhat lower during the session in which the amount of demands that Daisy was required to complete was decreased by one half (43%), but remained at levels similar to the demand condition in Phase 1. When the difficulty of the task was decreased, noncompliance decreased substantially (0%, 4%). Although decreased difficulty appeared to be the most likely variable responsible for the reduction in noncompliance, attention in the form of visual prompting may have also contributed to the decrease in noncompliance.

Results from Zach's analysis are presented in the second panel of Figure 2. Zach engaged in noncompliance during 26% of intervals during the demand plus escape condition in Phase 1, 0% of intervals in the free-play condition, and 4% and 0% of intervals in the diverted attention/contingent attention condition. These results were replicated in Phase 2, during which the percentage of noncompliance during the de-

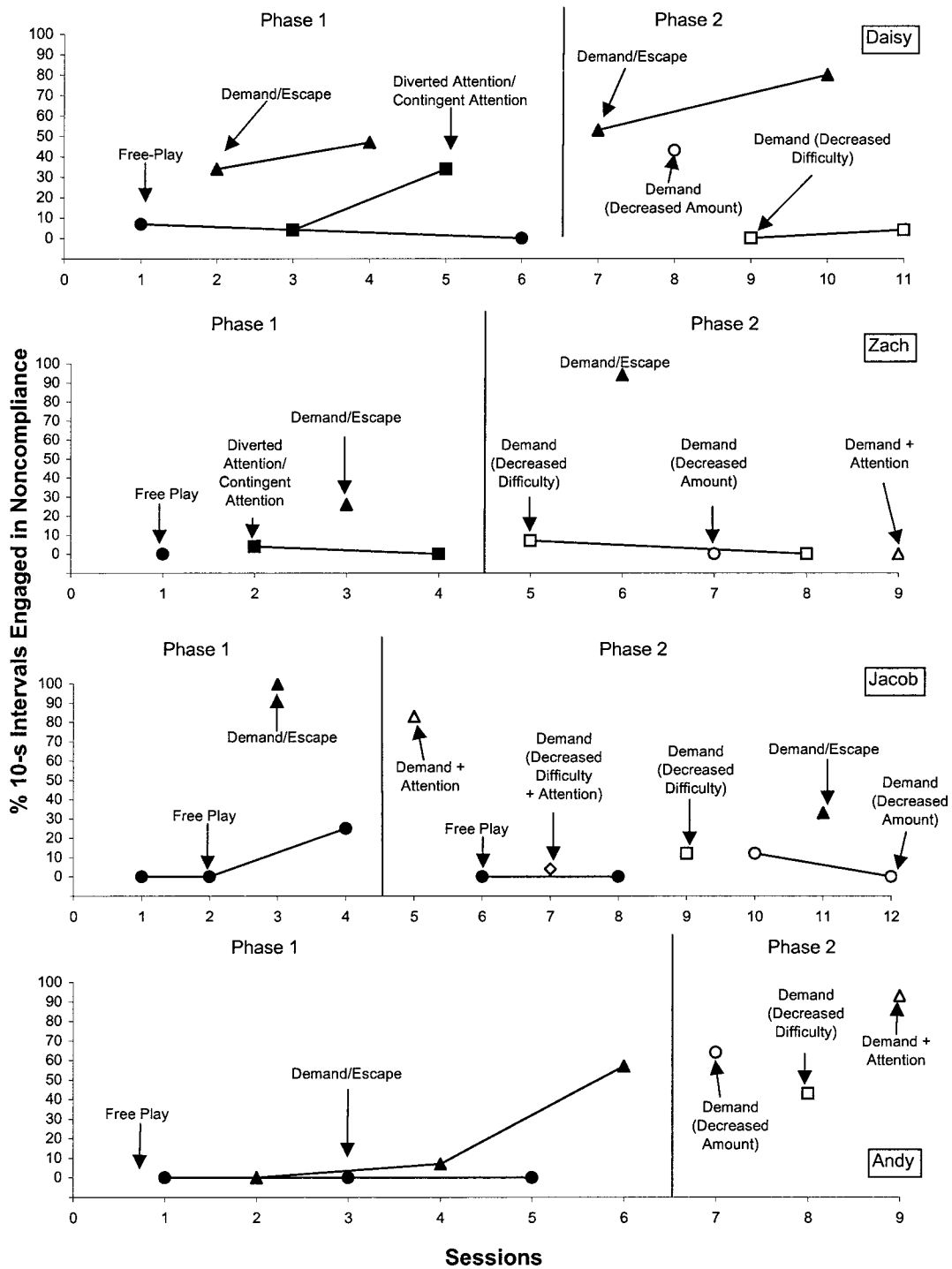


Figure 2. Percentage of sessions in which noncompliance occurred during free play (filled circles), diverted attention/contingent attention (filled squares), demand plus escape (filled triangles), demand plus attention plus escape (open triangles), demand with decreased difficulty (open squares), demand with decreased amount (open circles), and demand with decreased difficulty plus attention (open diamonds).

mand plus escape condition increased to 94% of intervals. Zach exhibited much lower percentages of noncompliance during all three test conditions of Phase 2. Noncompliance occurred during 7% and 0% of intervals during the two sessions of the demand (decreased difficulty) condition, and no noncompliance occurred during the demand (decreased amount) or demand plus attention conditions. Thus, for Zach, all manipulations of the independent variables resulted in decreased noncompliance.

Results from Jacob's analysis are presented in the third panel of Figure 2. Results from Phase 1 showed that Jacob was noncompliant during 100% of intervals during the demand plus escape condition compared to a mean of 8.3% of the intervals during the three free-play sessions (range, 0% to 25%). These results were replicated during Phase 2, in which Jacob engaged in a relatively high percentage of noncompliance during the demand plus escape condition (33% of intervals) but no noncompliance during two free-play sessions. Jacob also exhibited high percentages of noncompliance during the demand plus attention condition (83%), suggesting that the addition of noncontingent attention was insufficient to alter the reinforcing effects of escape from demands. However, lower percentages of noncompliance were observed with decreases in task difficulty (12%), decreases in task amount (12% and 0%), and decreases in difficulty plus attention (4%). These results suggest that manipulations of the task variables (difficulty and amount) functioned as motivating operations that lowered the effectiveness of the breaks from demands to function as negative reinforcement for noncompliance. The general decreasing trend across conditions in Jacob's data could also be interpreted as demonstrating an overall extinction effect (i.e., it is possible that continued prompting during breaks functioned as a form of escape extinction), but this seems unlikely given the

increase in noncompliance that occurred in the final demand plus escape condition relative to the two demand (decreased amount) sessions.

Results from Andy's analysis are presented in the bottom panel of Figure 2. Results from Phase 1 showed that Andy demonstrated an increasing trend in noncompliance during the three demand plus escape sessions (noncompliance was observed during 0%, 7%, and 57% of intervals). Noncompliance did not occur in the three free-play sessions. Andy continued to exhibit high percentages of noncompliance during all three test conditions of Phase 2. Noncompliance occurred during 63% of intervals of the demand (decreased amount) condition, 43% of intervals of the demand (decreased difficulty) condition, and 93% of intervals of the demand plus attention condition. It is possible that the increasing trend in noncompliance during Phase 1 resulted from a motivating operation associated with repeated demand sessions (i.e., repeated sessions may have increased the potency of the reinforcer that was maintaining noncompliance) which was then unaffected by the manipulations of the independent variables during Phase 2.

Overall, results from Experiment 2 showed distinct patterns of responding for each participant. Although all children displayed noncompliance, decreased amount of demands, decreased difficulty of demands, and decreased difficulty of demands plus attention resulted in varying levels of noncompliance for each child. Three of the 4 children (Daisy, Zach, and Jacob) showed decreases in noncompliance associated with decreased amount of demands; 2 children (Zach and Jacob) showed decreases in noncompliance associated with decreased difficulty of demands, whereas 1 child (Andy) showed no effects, and both children who experienced the decreased difficulty plus attention condition (Daisy and Jacob) showed decreases in noncompliance. These results

suggest that motivating operations for non-compliant behavior are idiosyncratic and require direct assessment.

GENERAL DISCUSSION

In this study, we altered antecedent variables that influenced noncompliance by including a potential positive reinforcer in the form of attention (Experiments 1 and 2) or by altering the variables of task difficulty and amount (Experiment 2) for 5 of 6 participants. The outcomes revealed orderly patterns of responding within participants but idiosyncratic patterns across participants, suggesting that different variables, related both to the task and to potential positive reinforcers, may be responsible for establishing or abolishing the consequences for non-compliance as reinforcing for different individuals.

Because consequences remained constant across demand conditions, interpretation of these results as showing that the antecedent manipulations often altered motivating operations that influence noncompliance appears to be warranted (Laraway et al., 2003). In Experiment 1, the reinforcing properties of breaks from a demand decreased for both participants when noncontingent attention was delivered. In Experiment 2, these results were replicated and extended to include the task variables of difficulty and amount. The antecedent variables manipulated in this study resulted in decreased percentages of noncompliance for 5 participants. Although the consequences for noncompliance included both negative and positive reinforcers (i.e., breaks contained escape from demands [a potential negative reinforcer] as well as access to attention and leisure items [potential positive reinforcers]), thereby making it impossible to identify the specific response-reinforcer relations, it was possible to identify quickly the antecedent variables that de-

creased noncompliance in an outpatient clinical setting.

Results from both experiments could be used to develop individualized treatment of noncompliance. For example, if noncompliance with task demands decreases when the difficulty of the task is reduced, treatment may consist of beginning with easier tasks and gradually adding more difficult ones. In contrast, for a child whose noncompliance decreases when attention is included in the task situation, noncontingent delivery of attention could be incorporated into task situations. Thus, these results are of clinical interest because they may lead to either more effective treatments of noncompliance or more options for treatment.

Several factors in this study merit caution when interpreting these data. When analyses like these are conducted during typical outpatient visits (e.g., 60 to 90 min), only a few, brief sessions can be conducted (e.g., 9 to 12 5-min sessions). This is an inherent limitation of assessments conducted in outpatient clinics, but these clinics are also the setting in which this population of children is most frequently evaluated. Although studies evaluating brief functional analysis methods have generally produced positive outcomes (Wallace & Iwata, 1999), caution is still warranted in interpreting these results. Of particular concern in this study is that the brevity of the assessment sessions may not have provided sufficient time for analyzing the relevant motivating operations.

It is of interest that inclusion of a potential positive reinforcer (attention) resulted in decreased noncompliance for 3 of 6 participants (Maira, Nick, and Zach). As suggested by previous investigators (e.g., Iwata, 1987; Lalli et al., 1999; Roane, Fisher, & Sgro, 2001), the addition of an arbitrary positive reinforcer can sometimes be sufficient to reduce problem behavior that is maintained, partially or solely, by negative reinforcement. Previous studies (e.g., Osborne, 1969) noted

that breaks from demands might operate as either negative reinforcement in the form of escape from work or positive reinforcement in the form of access to preferred activities. More recent studies (e.g., Golonka *et al.*, 2000; Zarcone, Fisher, & Piazza, 1996) have demonstrated that breaks from demands that consist of escape to an enriched environment (i.e., one that includes access to preferred activities, adult attention, or both) can be a more potent reinforcer than breaks that consist of escape to an environment that is devoid of potential positive reinforcers. Collectively, these studies suggest that non-compliance may be multiply maintained and highly individualized, warranting analysis of both maintaining reinforcers and the motivating operations that alter the value of the maintaining reinforcer.

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Received January 9, 2003
 Final acceptance February 9, 2004
 Action Editor, Richard Smith

STUDY QUESTIONS

1. How were difficult and easy tasks operationally defined?
2. What behaviors comprised the definition of noncompliance? As a result, how was it possible for a participant to be scored as noncompliant while still working?
3. What antecedent variables were manipulated during each of the demand conditions in Experiment 1?
4. Summarize the results of Experiment 1 in terms of both (a) function of problem behaviors and (b) effects of attention manipulations.
5. How might access to attention and leisure items during the demand conditions have influenced the results of Experiment 1?
6. What antecedent variables were manipulated in Phase 2 of Experiment 2?
7. Summarize each participant's performance during Phase 2 of Experiment 2.
8. How might the results of this study be used to develop treatments to reduce noncompliance?

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