

**BRIEF HIERARCHICAL ASSESSMENT OF POTENTIAL  
TREATMENT COMPONENTS WITH CHILDREN IN  
AN OUTPATIENT CLINIC**

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Seven parents conducted assessments in an outpatient clinic using a prescribed hierarchy of antecedent and consequence treatment components for their children's problem behavior. Brief assessment of potential treatment components was conducted to identify variables that controlled the children's appropriate behavior. Experimental control via a brief reversal was achieved for 6 of the 7 children, (1 child continued to behave appropriately following initial improvement in behavior). For these 6 children, improved behavior occurred with changes in treatment components. Our results extend previous studies of direct assessment procedures conducted in outpatient clinic settings.

DESCRIPTORS: outpatient clinic, functional analysis, childhood behavior problems

Previous studies using brief, direct assessments in outpatient clinics had what Hayes, Nelson, and Jarrett (1987) referred to as "treatment utility"; the results of assessment led directly to treatment recommendations (Cooper, Wacker, Sasso, Reimers, & Donn, 1990; Cooper et al., 1992; Northup et al., 1991). The response patterns obtained in these studies, like those obtained in extended functional analyses, suggest that operant function may be more important than demographic or diagnostic variables in developing treatments. Cooper et al. (1990, 1992) used brief assessment conditions that hierarchically manipulated task preference, task demands, and parental attention to identify variables that maintained target behavior in children with mild disabilities and conduct problems. Assessment results enabled therapists to formulate specific and individualized treatment recommendations. Given these findings, it makes

intuitive sense to construct very specific treatment packages in outpatient clinic settings. The direct assessment of potential treatments may be more reinforcing for parents than assessment of maintaining variables of aberrant behavior if treatment effects can be demonstrated in the clinic. The major purpose of this study was to assess the effects of distinct antecedent and consequent variables presented in a hierarchical manner as a means of formulating specific treatment packages for young children with mild behavior problems.

The hierarchy was based on an analysis of the ease of implementation of various treatment components by parents that could be evaluated within the 90 min typically allotted for outpatient psychological evaluations. Our rationale in constructing the hierarchy was to begin assessment with antecedent variables, because they are often easier for parents to implement, are controlled by parents, and can be used proactively in identified problem situations. If the assessed antecedent variables failed to control behavior, we then assessed reinforcement procedures, followed by mild punishment procedures, to identify the least intrusive treatment package possible for any given child.

Thus, our assessment extended the methodology of Cooper et al. (1992) by including a larger sample of potential independent variables and by arranging the assessment conditions in a least-to-most intru-

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sive hierarchical manner. By conducting the assessment within a hierarchy, we hoped to identify quickly variables that could provide the basis for an effective treatment package. To evaluate this outcome, follow-up calls to parents assessed their use and success with the recommended treatment packages at home.

## METHOD

### *Participants and Setting*

We selected 7 children between the ages of 4 and 6 years who were regularly scheduled patients in our Behavior Management Clinic (see Cooper *et al.*, 1990, for a brief description of the clinic) and who met the following criteria: (a) The child displayed inappropriate conduct behaviors, as defined by DSM III-R criteria; (b) grade level was first grade or below; (c) intellectual functioning was within the mild range of mental retardation or above; (d) the primary referral issue was behavior problems at home; and (e) parents or guardians rated the child's problems as severe according to the Revised Behavior Problem Checklist (RBPC; Quay & Peterson, 1983).

Participants included 5 boys and 2 girls, ranging in age from 4 years 2 months to 6 years 10 months ( $M = 5$  years 5 months). The children's estimated intellectual functioning ranged from average ( $n = 5$ ) to mild mental retardation ( $n = 2$ ). Primary referral concerns included aggression, destructive behavior, noncompliance, temper tantrums, and overactivity. (Detailed descriptions of subject characteristics are available from the first author.)

All assessment procedures were conducted in an outpatient clinic examination room containing a desk, several chairs, assessment materials, and a one-way mirror. An intercom system provided auditory access from the examination room.

### *Measurement*

*Response definitions.* Three categories of child behavior were measured: *appropriate/on task*, *inappropriate/actively off task*, and *passively off task*. We defined appropriate/on-task behaviors as looking at the speaker or task while receiving

instructions, following directions, working on assigned tasks, vocalizing at a reasonable volume, and asking questions relevant to the task or directions. Inappropriate behaviors were aberrant and off-task behaviors, such as swearing, crying, persistent objections, loud vocalizations, temper tantrums, refusal to perform a task, and attempts to leave the room. Passively off-task behaviors were neither on task nor inappropriate and included looking away from the task for more than 20 s, playing with task materials, and perseverating on one portion of the assigned task.

We recorded nine categories of adult behavior: general directions, specific directions, choice offers, reprimands, offering preferred activities, delivering preferred activities, contingent praise or attention (differential reinforcement of appropriate behavior, DRA), contingent task assistance following an appropriate request by the child (differential reinforcement of communication, DRC), exclusionary time-out, and guided compliance.

*Data collection.* A trained observer collected data through the one-way mirror of the interview room. Data on the parent's behavior were recorded using a 9-s partial-interval recording procedure during 5-to 10-min sessions. Data on the child's behavior were recorded using a 10-s momentary time-sampling procedure during the same sessions, such that after recording the parent's behavior for 9 s, the child's behavior was recorded for 1 s.

*Procedural integrity.* Prior to each assessment condition, one experimenter provided child care while a second experimenter provided the participating parent with the following instructions regarding his or her interaction with the child during the next condition: (a) directions on how to present the designated task, (b) directions on how the parent should respond to the child's behavior, and (c) feedback on the parent's behavior in previous conditions (i.e., corrective feedback and/or praise for procedural integrity). Approximately 2 min were taken to provide the instructions. Modeling and coaching by the therapist were provided to 2 parents (Sam and Bill). Modeling consisted of the therapist demonstrating the correct way to conduct the assessment while the parent watched. The therapist

coached the parent by providing verbal prompts regarding the performance of treatment components as needed to ensure assessment integrity.

A measure of procedural integrity was calculated by recording the occurrence and nonoccurrence of prescribed assessment components on an interval-by-interval basis. Integrity was computed by dividing the number of prescribed occurrences plus appropriate nonoccurrences by the total and multiplying by 100%. The results of this analysis across all participants ranged from 33% to 100%, with a mean integrity rating of 86%. The low integrity rating for 1 child (Bill) occurred because his behavior during the beginning of the assessment (e.g., attempting to leave the examination room) prompted the use of treatment components that were not included in the hierarchy. The next lowest integrity rating was 66%.

*Interobserver agreement.* Two experimenters independently and concurrently recorded data for both parent and child behavior during an average of 83% (range, 60% to 100%) of the assessment conditions. Interobserver agreement was calculated on an interval-by-interval basis for occurrence of appropriate and inappropriate child behavior. Occurrence agreement was computed by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100%. Interobserver agreement for child behavior ranged from 69% to 100% ( $M = 91%$ ) across conditions. Agreement for parent behavior ranged from 33% to 100% ( $M = 75%$ ) across conditions. Agreements of less than 50% were correlated with low frequencies of parent behavior in specific assessment conditions.

### *Experimental Design*

We used a multielement design that consisted of a series of rapidly changing assessment conditions (Cooper et al., 1992). Each condition lasted approximately 5 min (range, 2 to 10 min;  $M = 6.3$  min). Assessment conditions shorter than 5 min were typically associated with conditions in which the child was given access to a preferred activity as soon as he or she completed a nonpreferred task. Assessment continued until improved behavior, de-

finied by an increase in appropriate/on-task behavior, occurred. Experimental control was then demonstrated by means of a reversal; the first successful condition was followed by a previously unsuccessful condition, and the successful condition was then repeated. A summary of the assessment sequence is presented in Table 1.

### *Assessment of Task Preference*

An experimenter joined the child in an examination room and showed the child a series of 10 common childhood activities, such as multicolored "counting bears," scissors, and cutting worksheets. As each activity was presented, the experimenter asked the child, "Do you like this? Is this something you would like to do?" The activity was identified as either preferred or nonpreferred according to "yes" or "no" responses. We made preferred activities available to the child during the first assessment condition (free play) and as rewards for successful completion in subsequent assessment conditions. The nonpreferred activities served as nonpreferred tasks, with demand level determined by the child's chronological age, parent and teacher reports, and previous assessment results when available. We used these nonpreferred tasks in all remaining assessment conditions.

### *Assessment Conditions*

*Free play: First control condition.* An experimenter provided the child with access to the preferred activities and asked the parent to play with the child but to allow him or her to use the activities without demands or reprimands. We encouraged the parent to simply play with the child and to "have fun." Thus, appropriate behavior was anticipated, because there were no demands on the child, and continuous positive attention was provided by the parent.

*General directions and discussion: Second control condition.* In this condition, parents presented a nonpreferred task and told the child in a neutral voice, "You need to do this. Get to work." (We believed that nonspecific instructions increased the demands of the task because the child was not

Table 1  
Clinical Protocol Summary

- A. Parent questionnaire/ revised child behavior checklist  
 B. Parent interview  
 C. Child preference assessment  
 D. Hierarchical analogue conditions:

Condition	Antecedent Conditions	Consequent Components
1	Free play (control condition)	Constant attention
2	General directions (control condition)	Discussion
3	Specific directions	Discussion
4	Specific directions + choice making	Discussion
5	Specific directions + choice making	Differential reinforcement of appropriate behavior (DRA)
6	Specific directions + choice making	DRA + Differential reinforcement of communication (DRC)
7	Specific directions + choice making	DRA + DRC + preferred activity
8	Specific directions + choice making	DRA + DRC + preferred activity + punishment: time-out or guided compliance

E. Parent wrap-up  
 F. Follow-up phone contact

guided to complete the task and was not told when the task would be terminated.) The parent then turned away from the child and read a magazine. If the child refused to do the task or engaged in any inappropriate behavior, the parent turned to the child and repeated the directive. If at any time the child attempted the task or was otherwise appropriate, the parent returned to reading the magazine. We expected the most inappropriate behavior during this condition, because demands were increased and attention (in the form of nagging) was provided for inappropriate behavior. If appropriate behavior remained above 80% during this condition, the assessment was discontinued (this occurred for Jenny during an evaluation conducted 1 week after her initial evaluation).

*Specific directions.* The parent presented a non-preferred task but provided specific instructions for the task's completion. Components of specific directions included (a) saying the child's name, (b) moving to within 1 m of the child and establishing eye contact, (c) stating a minimum of two behaviors needed to complete the task, (d) gesturing toward the task, and (e) briefly demonstrating how to do the task. We hypothesized that specific directions reduced the demands of the task by providing clear-

er expectations. As in the general directions conditions, the parent repeated the directions if the child was off task or inappropriate and ignored the child if he or she attempted the task.

*Choice making.* The parent presented two choices related to the completion of a nonpreferred task (e.g., "You may use the red crayon or blue crayon. You choose."). If the child made a choice, the parent provided specific directions described in the previous condition. We added choices to make the task relatively more preferred by the child (Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991). If the child did not make a choice, the parent chose for the child and provided specific directions. Contingencies for appropriate and inappropriate behavior remained the same as in the previous condition.

*Differential reinforcement of appropriate behavior.* The parent continued to provide the child with specific directions and choices relative to a nonpreferred task. However, if at any time during the condition the child attempted the task, the parent praised the child and offered encouragement (e.g., "Good job. You're working hard."), thus making attention contingent on appropriate behavior. If the child was off task or inappropriate, the parent ignored the child by reading a magazine.

*Differential reinforcement of communication.*

This condition consisted of all previous components, plus the additional component of giving the child a specific method to obtain parent assistance to lower the demands of the task. After providing the child with choices and specific directions, the parent said, "If you need help, just say 'help' and I'll help you." If the child solicited assistance in an appropriate manner, the parent assisted with a small portion of the task and then continued to provide positive attention (DRA) as long as the child remained on task.

*Preferred activities.* In addition to all previous components, the child was given access to a preferred activity contingent upon completion of the nonpreferred task. After task instructions were completed, the parent said, "If you finish your work, you can choose what you would like to do next. What would you like to do?" If the child completed the task, he or she was immediately given access to the preferred activity for approximately 5 min.

*Time-out and guided compliance.* All previous components continued with the addition of one of two mild punishment contingencies for off-task and inappropriate behavior. We selected the specific punishment contingency based on hypotheses regarding the maintaining factors for the child's inappropriate behavior. If the child actively sought attention (e.g., calling out to parent), time-out was used; the parent moved the child away from the work table and toward a blank wall for about 1 min. At the conclusion of time-out, the parent informed the child of expected behavior and reminded him or her of the positive contingencies for appropriate behavior.

If the child engaged in task refusal (e.g., destroying or throwing task materials), physical guidance was used to perform the task; the parent said, "If you do not begin, then I will make you do it." The word "make" was used so the child could clearly discriminate between adult assistance that is solicited through appropriate manding (e.g., "help") versus physical guidance that is applied to ensure compliance. If the child continued to refuse, the parent used hand-over-hand guidance. After completing a portion of the task, the parent stopped

using physical guidance to assist the child and reminded the child of the positive contingencies in place for appropriate behavior.

*Follow-Up*

The entire assessment required a maximum of 90 min to complete. After completion, an interdisciplinary staff meeting was held (pediatrician, nurse, speech therapist, psychologist), and recommendations for treatment were generated from the assessment data. The interdisciplinary team used historical and parent interview data, in addition to the direct assessment data, to generate the primary recommendations. However, the recommended treatment always included the components shown to be effective during the direct assessment.

The first author contacted 6 of the 7 parents by telephone within 6 months after their visit (range, 1 to 6 months;  $M = 3.75$  months) and asked each parent to describe his or her child's present behavior and to give specific examples of how he or she had been managing the child's behavior. The first author recorded the conversation verbatim on a standard hospital phone contact form. The second and third authors (who were blind to the identity of the children and to previous recommendations) scored the verbatim description according to (a) the treatment components identified by the parent, (b) consistent use of identified treatment or treatment integrity (i.e., good or poor), (c) treatment outcome (i.e., treatment was discontinued, treatment was ineffective, treatment continued with some modifications, treatment continued as recommended, and treatment was discontinued because no longer needed), and (d) overall parent perception of treatment efficacy (i.e., low, medium, high).

Interrater agreement for this follow-up measure was calculated by comparing reviewer ratings of each identified treatment component. An agreement occurred only when both raters scored the same rating for each identified treatment component. Agreement on treatment component integrity ranged from 50% to 100%, with a mean of 94%. Agreement on the continued use of treatment components ranged from 75% to 100%, with a mean of 94%. Agreement on the reported level of treat-

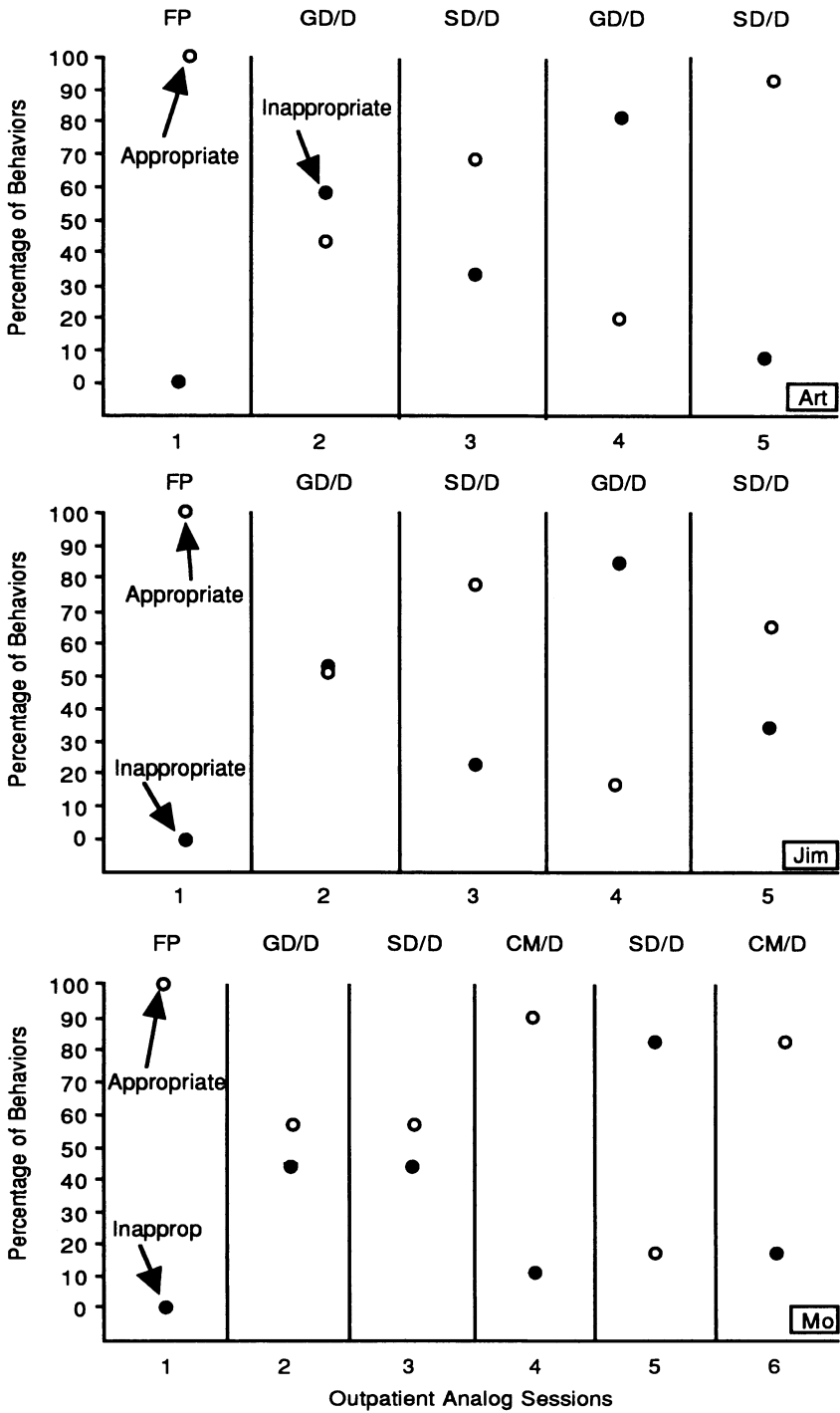


Figure 1. Percentage occurrence of child behavior across conditions for Art, Jim, and Mo. Passive and active off-task behaviors are added to form a combined total of inappropriate behavior.

ment effectiveness was 67%. The relatively low interrater agreement on this particular measure was the result of one reviewer rating treatment effectiveness as "medium" rather than "high" for 2 children.

## RESULTS AND DISCUSSION

### *Assessment*

The individual performances of the 7 children are shown in Figures 1 through 3. Improved behavior was obtained with all 7 children, and experimental control via a brief reversal analysis was achieved for 6 of them (Art, Jim, Mo, Bart, Sam, and Bill). Improved behavior occurred with a change in the antecedent stimulus (specific directions and choice making) for 3 children and by consequent interventions (DRA and preferred activities) for 3 other children.

All 7 children demonstrated 100% appropriate behavior during the free-play control condition. For Art and Jim, the lowest levels of appropriate behavior occurred during the general directions condition (20% and 17%, respectively), and the highest levels occurred in the specific directions condition (93% and 78%, respectively). For Mo, the lowest level occurred during the specific directions condition (17%), and the highest level occurred during the choice-making condition (90%). For Bart, the lowest level occurred during the specific directions condition (37%), and the highest level occurred during the DRA condition (100%). For Sam, the lowest level occurred during the specific directions condition (17%). In Sam's assessment, mild punishment in the form of physical guidance was needed. Although he initially resisted, he became compliant by the end of the assessment. The punishment component was then removed in the final condition, and his appropriate behavior reached its highest level (98%). However, it was unclear whether he was responding exclusively to the DRA component or whether carryover occurred from the use of guided compliance; therefore, we considered this condition to involve both DRA and guided compliance. For Bill, the lowest level of appropriate behavior occurred during the specific directions con-

dition (0%). Preferred activity conditions were repeated to provide additional practice sessions for Bill's parent, due to poor treatment integrity. The final preferred activity condition was conducted during a follow-up visit 6 months later to assess treatment integrity further; this condition resulted in the highest level of appropriate behavior (100%). For Jenny, the lowest level of appropriate behavior occurred during the initial general directions condition (36%), and her highest level occurred during the choice-making condition (97%). However, a reversal was not obtained, because she continued to behave appropriately following her improved behavior in this condition. It is possible that Jenny was responding to the cumulative effects of previous treatment conditions. In a follow-up visit 1 week later, two general directions/discussion conditions failed to produce previous levels of inappropriate behavior, and the assessment procedure was discontinued.

### *Follow-Up*

All parents reported using multiple treatment components to manage their children's behavior. A comparison of recommended treatment and reported treatments suggested that, on average, parents used at least half of the recommended treatments (range, 25% to 80%;  $M = 56%$ ). Scoring of treatment integrity indicated that parents' descriptions of the interventions used corresponded with the prescribed treatments (83% of identified components were scored as being conducted with "good" integrity). Scoring of reported treatment outcomes suggested that parents continued to use recommended treatments (88% of identified components were scored as "treatment continued as recommended"). Scoring of parents' verbal reports of overall treatment effectiveness indicated that parents were satisfied with changes in their children's behavior as a result of treatment recommendations. Of the 6 parents contacted, all were rated as expressing "high" satisfaction. These results replicate the finding of Cooper et al. (1990) that parents appeared to use the recommended treatments, implemented the treatments with reasonable integrity, continued to use the treatments over time, and were

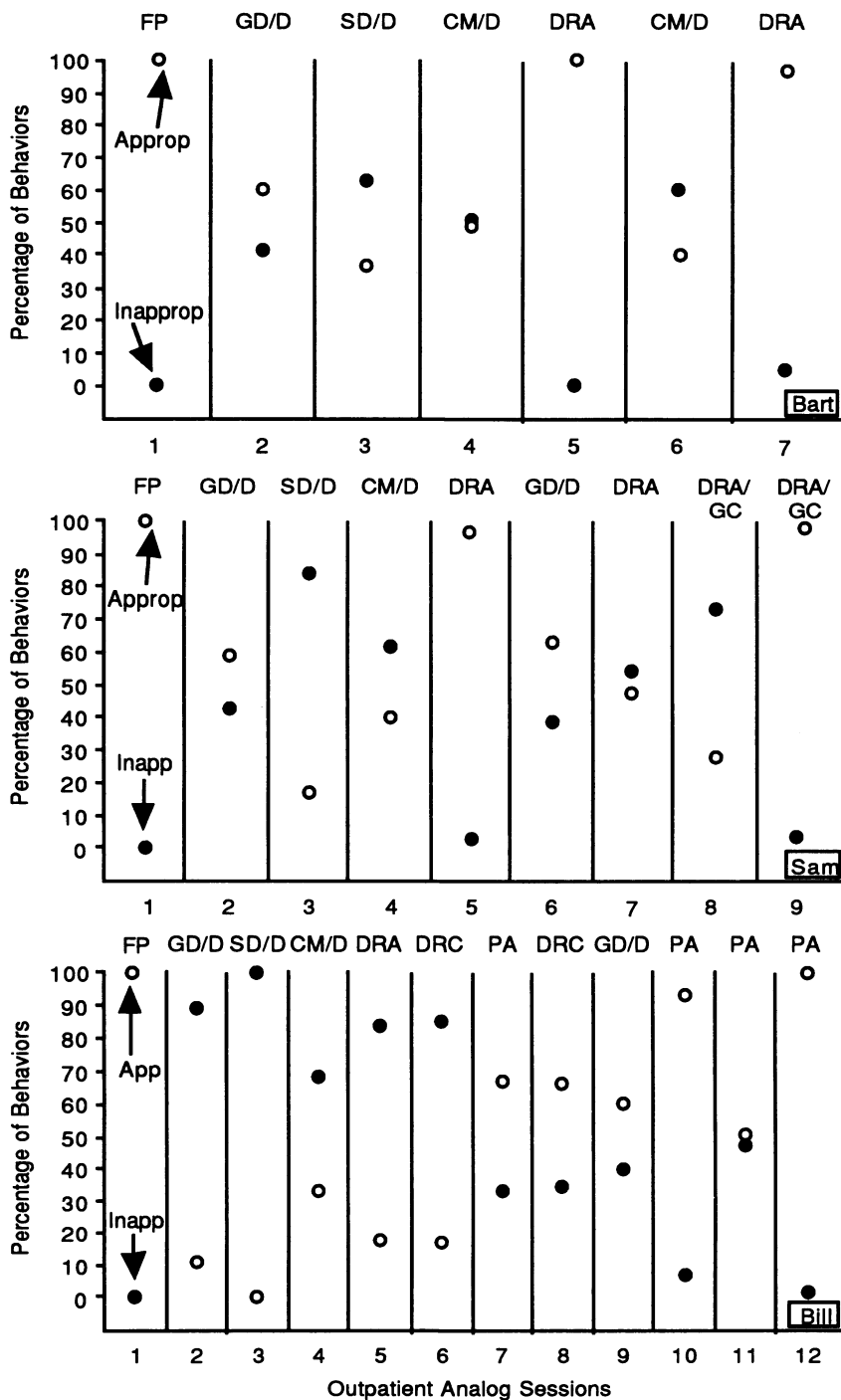


Figure 2. Percentage occurrence of child behavior across conditions for Bart, Sam, and Bill. Passive and active off-task behaviors are added to form a combined total of inappropriate behavior.



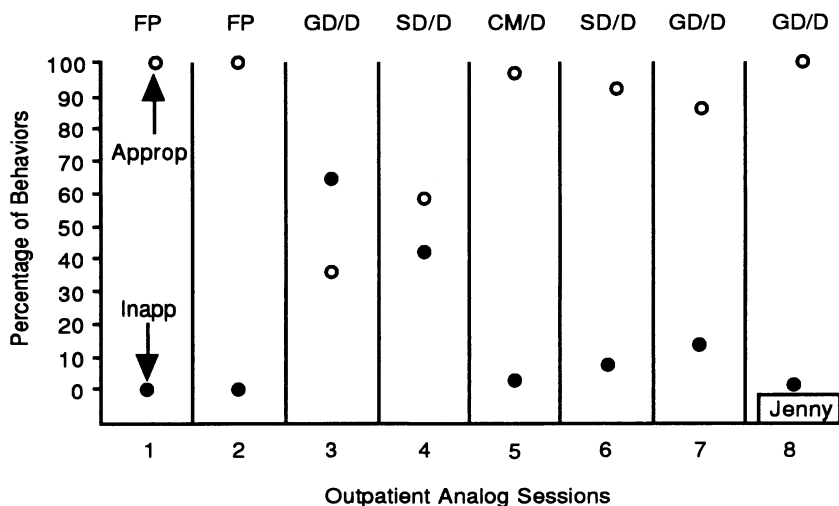


Figure 3. Percentage occurrence of child behavior across conditions for Jenny. Passive and active off-task behaviors are added to form a combined total of inappropriate behavior.

satisfied with changes in their children's behavior. However, these results are only suggestive because data were collected in an indirect manner.

These results extend the findings of previous studies of direct assessment procedures in outpatient clinics (Cooper et al., 1990, 1992) in three ways. First, younger children were evaluated; this is important because young children with mild but persistent behavior problems comprise the largest group of children referred to our clinic by medical staff for "behavior management." Second, we incorporated a larger set of potentially active variables into a hierarchical assessment, thus enabling us to recommend more specific treatments in an efficient manner. Third, the arrangement of the treatment components in a least-to-most restrictive order enabled us to identify the least intrusive intervention package. Thus, these results show promise as a method for efficiently and empirically identifying apparently effective treatment packages in an outpatient clinic.

Many of the behavior problems of young children are quite common and mild relative to the aberrant behaviors assessed in most studies that use functional analysis procedures. When the problems are mild and "normal," it may be more efficient to assess potential treatments, as described in this study, than to assess the function of the behavior.

What is not clear is what combination of treatment components will most effectively and efficiently address parents' concerns. It is under these conditions that procedures such as the hierarchical assessment should be considered in place of brief functional analysis procedures (Northup et al., 1991).

An extension of the hierarchical assessment would be to test the effectiveness of a package of treatments initially, based on hypotheses generated about probable effective treatments (Repp, Felce, & Barton, 1988), rather than to construct the package in a cumulative fashion. Subsequent refinement of this package could then be accomplished through a component analysis in which various treatment components are manipulated to identify the "best" treatment package for each individual child. This might prove to be advantageous because parents would not have to conduct several ineffective treatments before finding an effective one.

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