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COMPLIANCE AND ATTENTION TRAINING IN CHILDREN DIAGNOSED WITH ATTENTION-
DEFICIT/HYPERACTIVITY DISORDER

Heather Lynne Ringeisen

A Dissertation
Submitted to
the Graduate Faculty of
Auburn University
in Partial Fulfillment of the
Requirements for the
Degree of
Doctor of Philosophy

Auburn, Alabama

August 30, 1999

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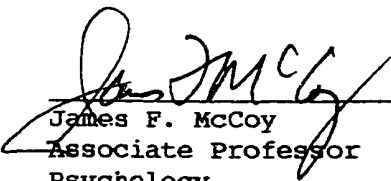
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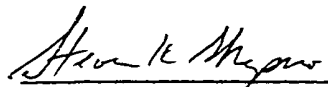
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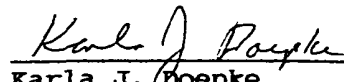
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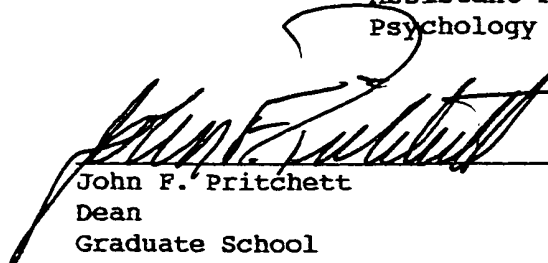
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DISSERTATION ABSTRACT
COMPLIANCE AND ATTENTION TRAINING IN CHILDREN DIAGNOSED WITH ATTENTION-
DEFICIT/HYPERACTIVITY DISORDER

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Parent training outcome studies implemented with the families of children diagnosed with Attention-deficit/Hyperactivity Disorder (ADHD) demonstrate posttreatment decreases in noncompliance, but typically fail to influence child attention and/or hyperactivity. Few programs contain skills to address the core symptoms of ADHD separate from command noncompliance. This study evaluated a 12-session parenting intervention with four ADHD boys (8-10 years) within a multiple baseline across subjects design. Treatment included behavior modification procedures, bug-in-the-ear coaching, and videotape observations of parent/child task interactions. Treatment first addressed child noncompliance during parent-child interactions and then child inattention during an academic homework situation. Treatment outcomes were evaluated via parent report

and behaviorally coded videotaped observations of parent-child interactions during command-compliance and academic tasks.

Results from the treatment's focus on noncompliance demonstrated decreasing trends in the occurrence of noncompliant behavior across all subjects. Three out of four subjects demonstrated concurrent decreases in negative behavior (e.g., whining, tantrums). Parents increased praise and decreased the number of times they repeated commands to their children. Three subjects showed decreases in observations of off-task behavior only after treatment targeted academic inattention. No changes were noted in ADHD non-target behaviors (e.g., fidgeting, off-task vocalizations) or the number of academic problems completed. Parent ratings of child behavior indicated a decrease in home behavior problems and ADHD symptoms. Participating parents further reported lowered perceived parenting stress in response to treatment, but indicated no change in self-reported psychopathology. Results indicated that parents may successfully implement behavior modification techniques to address not only noncompliance, but also child inattention. Implications are made for interventions for the families of ADHD children.

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I. INTRODUCTION

Attention-deficit/Hyperactivity Disorder (ADHD) is increasingly recognized as a condition that carries with it a strong risk for interpersonal difficulty. This difficulty is typically exhibited in a majority of the child's major social domains, and is particularly noticeable in parent-child interactions. Consequently, parent training is one of the most common services provided to the families of children diagnosed with ADHD. Treatment outcome studies investigating the effects of parenting interventions typically indicate posttreatment decreases in parental negativity and child noncompliance. However, parenting interventions usually fail to influence the core symptoms of ADHD. This study was designed to evaluate a parenting intervention with ADHD children which attempted to address both child noncompliant and off-task behavior.

Characteristics of ADHD Children and Their Families

Symptoms of ADHD are some of the most frequent reasons that children are referred to mental health clinics in the United States (Frick & Lahey, 1991). ADHD diagnosis prevalence rates range from approximately 3 to 5% in the childhood population (American Psychiatric Association, 1994; Barkley, 1990). ADHD is characterized by developmentally inappropriate and maladaptive levels of inattention, hyperactivity, and impulsivity. These characteristics present problems

for ADHD children in academic and social domains. Furthermore, longitudinal studies of children with ADHD have consistently found that nearly 70% continue to experience the disorder by the age of 15 years (Barkley, Fischer, Edelbrock, & Smallish, 1990; Gittelman, Mannuzza, Shenker, & Bonagura, 1985).

The problems of ADHD children are rarely limited to the disorder's core symptoms; instead, they frequently include other types of psychosocial difficulties such as conduct disturbance (e.g., aggression, oppositional defiant behavior), academic underachievement, diminished self-esteem, depression, and peer relationship problems (Barkley, 1990a). The comorbidity rates of Oppositional Defiant Disorder (ODD) and Conduct Disorder (CD) with ADHD range from 20% (Barkley, 1990) to 60% (Biederman, Munir, & Knee, 1987). The subgroup of hyperactive children with concurrent oppositionality and/or aggression appear to have a greater risk for many family, school, and peer-related problems; this subgroup also appears to have a poor long-term outcome when compared to children with hyperactivity alone (Abikoff & Klein, 1992; Hinshaw, 1987; McGee, Williams, & Silva, 1984).

The combination of ADHD core features and typical difficulties in rule compliance often lead to disruptions in familial relationships. For example, the interactions of ADHD children with their parents and siblings have been shown to be inherently more negative and stressful than those in families of non-ADHD children (Anderson, Hinshaw, & Simmel, 1994; Danforth, Barkley, & Stokes, 1991; Mash & Johnston, 1983a). During play and task situations, research on parent-child interaction patterns has found ADHD children to engage in more negative

and noncompliant behaviors than non-ADHD children (e.g., Mash & Johnston, 1982). When compared to the mothers of non-ADHD children, maternal behaviors with ADHD children during structured task situations have been found to be more negative, directive, and less responsive (Befera & Barkley, 1985; Cunningham & Barkley, 1979; Mash & Johnston, 1982). Furthermore, the mothers of ADHD children are more likely to be experiencing their own psychological problems (Befera & Barkley, 1985; Biederman, Munir, & Knee, 1987; Murphy & Barkley, 1996; Nigg & Hinshaw, 1998), higher parenting stress (Fischer, 1990; Mash & Johnston, 1990), and increased marital discord (Barkley, Fischer, Edelbrock, & Smallish, 1990) than the parents of non-ADHD children. When further compared with the parents of nonproblem children, these parents also report lower parenting self-esteem (Johnston, 1996; Mash & Johnston, 1983b) as well as an increased sense of helplessness in the parenting role (August, Realmuto, MacDonald, Nugent, & Crosby, 1996).

Parenting Interventions with ADHD Children

Current treatments for children with ADHD often encompass a wide variety of medical and/or psychosocial interventions which may include psychotropic medication, social skills training, cognitive-behavioral self-control therapy, behavioral parenting interventions, family therapy, and classroom behavior modification. The inclusion of parenting interventions in this multi-modal treatment is justified through a variety of empirical frameworks. First, stimulant medication has demonstrated only a short-term efficacy in reducing the core symptoms of ADHD (Jacobvitz, Sroufe, Stewart, & Leffert, 1990; Pelham,

Greenslade, & Vodde-Hamilton, 1990). The long-term efficacy of stimulant medication has not been demonstrated for any domain of child functioning, including scholastic achievement (Barkley, 1990; Jacobvitz et al., 1990; Weiss & Hechtman, 1986). ADHD children's difficulties with rule compliance and oppositional behavior typically place a strain on family relationships (e.g., Anderson et al., 1994). Longitudinal studies further suggest that negative family functioning clearly impacts the development of ADHD children (Biederman et al., 1995). Given the likelihood of adverse family functioning in the families of ADHD children as well as the lack of long-term stimulant medication efficacy, behavioral parent training seems a natural means to positively influence family difficulties and decrease child behavior problems.

The majority of parenting interventions implemented with the families of ADHD children incorporate similar behavior management strategies (e.g., positive attending skills, time-out, contingency reward management). These similarities stem from their common etiology rooted in the literature on child aggression and noncompliance/defiance. Constance Hanf (1968, 1969) was one of the earliest theorists to develop a two-stage behaviorally-oriented parenting program to address childhood noncompliance. In the first stage of this program, parents were taught to utilize positive attention to appropriate child behaviors (e.g., compliance) and ignore inappropriate behaviors. During the second stage of the program, parents were instructed to use time-out from attention and reinforcing activities as a consequence for child noncompliance. Hanf's combination of positive attending and contingency-based punishment specifically influenced subsequent parenting programs

designed by Forehand and McMahon (1981) and Barkley (1987, 1997b).

These two programs, or similar variations, dominate the types of parenting interventions commonly utilized with ADHD children.

Outcome studies evaluating the effectiveness of parenting interventions with ADHD children demonstrate evidence of post-treatment parental behavior change. Those studies coding laboratory observations of parent-child interactions before and after treatment typically find post-treatment decreases in the number of commands issued, increases in positive attending, and decreases in negative behavior (Barkley, Guevremont, Anastopoulos, & Fletcher, 1992; Erhardt & Baker, 1992; Pisterman, Firestone, McGrath, Goodman, Webster, & Mallory, 1989; Pisterman, Firestone, McGrath, Goodman, Webster, Mallory & Goffin, 1992b). In fact, only Dubey, O'Leary, and Kaufman (1983) failed to find increases in observed positive parenting behaviors. The lack of significant changes in the Dubey et al. (1983) study likely reflect nonspecific parent target behaviors such as "criticism, suggestions, and verbalizations" (p. 235) as well as the use of a relatively noninteractive parent-child task (a Wechsler Adult Intelligence Scale Block Design task). The treatment outcome literature also demonstrates fairly consistent post-treatment changes in targeted child behavior. For instance, most studies show a decrease in laboratory observed child noncompliance to parental commands (Erhardt & Baker, 1990; Pisterman et al., 1989, 1992b).

Despite changes in child noncompliance, research suggests that the improvements resulting from parenting interventions with ADHD children may fail to generalize to nontargeted child behaviors. Following a

behavior management program for child noncompliance, Erhardt and Baker (1990) noted little post-treatment improvement in parent ratings of child aggression. Similarly, Pisterman et al. (1989) observed no significant post-treatment decrease in the frequency of observed child inappropriate behaviors (e.g., tantrums, whining, yelling, crying). In addition, parenting programs appear to have little effect on observed levels of ADHD child attention. Pisterman et al. (1989) and Dubey et al. (1983) observed no post-treatment increases in ADHD children's mean time on a supervised laboratory task. Pisterman et al. (1992b) supplemented a traditional behavioral management program with attention training components but continued to demonstrate no post-treatment increase in child on-task behavior. Regardless of parenting program content, parenting interventions with ADHD children have failed to demonstrate observable improvement in the core symptoms of ADHD.

In contrast to the lack of observed changes in child attention, the parents of ADHD children often report post-treatment decreases in ADHD child symptoms (Anastopoulos, Shelton, DuPaul, & Guevremont, 1993; Dubey & Kaufman, 1978; Dubey et al., 1983; Erhardt & Baker, 1990). However, this finding is not consistent across studies. Pisterman et al. (1989) found no post-treatment improvement in ratings on the Hyperactivity Index (a composite of attention, hyperactivity, and conduct problems) of the Conners' Parent Rating Scale (Conners, 1989). Following parenting interventions, parents also tend to report decreases in global child behavior problems and/or psychopathology (Barkley et al., 1992; Bidder, Gray, & Newcombe, 1978; Blakemore, Shindler, & Conte, 1997; Dubey & Kaufman, 1978; Dubey et al., 1983). Parental ratings of

child behavior are the most commonly used outcome variable in this literature, and provide the most consistent support for the efficacy of parenting interventions with the families of ADHD children.

A final treatment outcome domain which has demonstrated positive results in the families of ADHD children relates to parent functioning. Although traditional behavior management programs lack components which specifically address parental functioning, studies have demonstrated post-treatment reductions in parenting stress (Anastopoulos et al., 1993; Blakemore et al., 1997; Pisterman, Firestone, McGrath, Goodman, Webster, Mallory, & Goffin, 1992a) and increases in reports of parenting sense of competence (Anastopoulos et al., 1993; Pisterman, Firestone, McGrath, Goodman, Webster, Mallory, & Goffin, 1992a). Studies have indicated that parenting interventions do not lead to subsequent improvement in reports of marital adjustment and/or psychopathology (Anastopoulos et al., 1993; Barkley et al., 1992). Apparently, parenting interventions in the families of ADHD children lead not only to improved behavioral parenting skills, but also to a concurrent change in self-reported parental psychosocial functioning.

Parenting Interventions Versus Other Treatments

The efficacy of behavioral parenting interventions with ADHD children has been compared to that of stimulant medication (Firestone, Crowe, Goodman, & McGrath, 1986; Firestone, Kelly, Goodman, & Davey, 1981; Gittelman, Klein, Abikoff, Katz, Pollack, & Mattes, 1980; Gittelman-Klein, Klein, Abikoff, Katz, Gloisten, & Kates, 1976; Pelham, Schnedler, Bender, Nilsson, Miler, Budrow, Ronnei, Paluchowski, & Marks,

1983; Pelham, Schnedler, Bologna, & Contreras, 1980; Pollard, Ward, & Barkley, 1983) and/or cognitive-behavioral self-control child therapy (Horn, Ialongo, Greenberg, Packard, & Smith-Winberry, 1990; Horn, Ialongo, Pascoe, Greenberg, Packard, Lopez, Wagner, & Puttler, 1991; Horn, Ialongo, Popovich, & Peradotto, 1987; Ialongo, Horn, Pascoe, Greenberg, Packard, Lopez, Wagner, & Puttler, 1993). Several studies have evaluated the effects of a multi-component intervention which include parent training (Bloomquist, August, & Ostrander, 1991; Cocciarella, Wood, & Low, 1996; Henry, 1987). Frequently, multi-modal treatment outcome studies include a behavior therapy component which involves parent training and either teacher training (Bloomquist et al., 1991; Gittelman et al., 1980; Gittelman-Klein et al., 1976; Pelham et al., 1980, 1983), or school consultation (Horn et al., 1990, 1991; Ialongo et al., 1993). These studies typically demonstrate posttreatment improvement in parental ratings of child problematic behavior (Firestone et al., 1981; Gittelman et al., 1980; Horn et al., 1987, 1990, 1991; Pelham et al., 1980, 1983; Pollard et al., 1984) and improved teacher ratings (Firestone et al., 1981; Gittelman et al., 1980; Gittelman-Klein et al., 1976; Horn et al., 1991; Pelham et al., 1980, 1983). Those few studies measuring observed parent-child interactions have demonstrated posttreatment decreases in the frequency of parental commands (Pelham et al., 1980; Pollard et al., 1984). Pollard et al. (1984) also found increases in observed parental praise only after stimulant medication treatment was followed by a parenting intervention.

Given the lack of long-term stimulant medication benefits, many researchers hoped that behavioral treatments would supplement and lengthen positive treatment outcome. At best, treatment outcome research has shown that behavioral treatments (including parent training) may have a slight additive effect when combined with medication (Horn et al., 1991; Pelham et al., 1983). There is also limited evidence that combining behavior therapy and medication treatment increases the likelihood that an ADHD child's behavior will approximate that of his or her peers (Gittelman et al., 1980; Gittelman-Klein et al., 1906; Horn et al., 1991); however, behavioral treatments alone have not been shown to approximate the singular effects of medication on child attention, hyperactivity, and impulsivity.

Two long term follow-up studies have been conducted investigating the effects of behavioral treatment and stimulant medication with ADHD children (Firestone et al., 1986; Ialongo et al., 1993). These studies indicate little if any extended benefit of either medication or behavior therapy on teacher behavior rating scale reports or observed attention (Firestone et al., 1986), as well as some deterioration in parent report (Firestone et al., 1986). At nine months following the withdrawal of psychostimulant medication and behavior therapy, Ialongo et al. (1993) found "erosion to varying degrees in the pretest to posttest gains in teacher rated inattention, hyperactivity, and impulsivity, direct observations of off-task behavior, performance on laboratory measures of attention and impulsivity, and sight vocabulary" (p. 187). Consequently, despite initial post-treatment improvements in ratings of child behavior, classroom behavior, achievement, attention, and/or child

adjustment, the current data available fail to indicate any generalized treatment effects, whether gathered from medication or behavior therapy conditions, which are maintained over time.

In summary, parenting intervention programs appear most beneficial in reducing ADHD child noncompliant behavior and in improving parental psychosocial functioning (e.g., stress, sense of competence). These positive treatment results directly address the two primary reasons for including parent programs in treatment planning. First, the characteristics of ADHD children appear to place strains on family functioning and increase parent stress; parent training appears to reduce this strain. Second, a high degree of comorbidity has been noted between oppositional behavior and ADHD; parent training reliably decreases child noncompliance. However, parent training appears to be of little use in alleviating those core symptoms of ADHD. In addition, treatment outcome results do not appear to be linked to any one particular parent training protocol. Those few studies which did evaluate the effectiveness of different parenting programs (Barkley et al., 1992; Dubey et al., 1983) failed to find many individual treatment group differences. Regardless of specific parent training protocol components, the most confident treatment efficacy conclusions stem from the general effects of training the parents of ADHD children in management strategies for noncompliant child behaviors.

ADHD versus ADHD/ODD Parenting Interventions

No one parenting treatment paradigm appears to be implemented more than any other with the families of ADHD children. In fact, most

outcome studies describe parenting treatment components without providing a detailed description of their treatment program or its etiology (e.g., Bidder et al., 1978; Cocciarella et al., 1995; Dubey et al., 1983; Dubey & Kaufman, 1978; Erhardt & Baker, 1990; Firestone et al., 1981; Gittelman-Klein et al., 1976; Henry, 1987). Other studies indicate the use of a modified version of Forehand and McMahon's (1981) and Patterson's (1976) treatments without specifying the nature of their modifications (e.g., Horn et al., 1987, 1990, 1991; Ialongo et al., 1993). Consequently, only a few studies test the efficacy of a specific manualized parent training program (e.g., Anastopoulos et al., 1993; Barkley et al., 1992; Blakemore et al., 1997; Bloomquist et al., 1991; Pisterman et al., 1989, 1992, 1993; Pollard et al., 1984). Even fewer of these manualized treatment programs contain components specifically modified to address the individual needs of families with ADHD children (e.g., Anastopoulos et al., 1993; Blakemore et al., 1997; Bloomquist et al., 1991; Pisterman et al., 1989, 1992a, 1992b). For instance, Barkley (1987) and Anastopoulos et al. (1993) included an introductory session regarding the features of ADHD and its treatment, but treatment continued to address only oppositional features.

This lack of distinction between the potential needs of a general ADHD population versus those of a comorbid ADHD/ODD population is further demonstrated in the samples of treatment outcome studies. A few of the parenting intervention studies narrow their child target population by including only ADHD children who reportedly demonstrate symptoms of child noncompliance as well as inattention and/or hyperactivity (Pisterman et al., 1989, 1992a, 1992b; Pollard et al.,

1984), while the rest fail to specify any degree of oppositional characteristics in their ADHD samples. No studies separate differential treatment effects based on sample ADHD or oppositional child characteristics.

Treatment outcome research with parenting interventions in ADHD children shows the most promisingly consistent results in response to child noncompliance. As a result, it seems likely that defining the target population as "children with ADHD" versus "oppositional ADHD children" would heavily influence treatment outcome results. In fact, lack of information regarding subject comorbidity characteristics has been described as one of the leading concerns with child psychotherapy research (Kazdin, 1991; Kendall & Morris, 1991). ADHD children with a comorbid diagnosis of Oppositional Defiant Disorder (ODD) show more aggressive behavior problems than those singularly diagnosed with ADHD. Research has also shown that the subgroup of ADHD children with concurrent aggressive or oppositional characteristics has a greater risk for many family, school, and peer-related problems (Frick, 1994; Frick & Lahey, 1991). Clearly, ADHD/ODD children have multiple needs that are likely different from those of children diagnosed solely with ADHD. A behavioral parenting treatment intervention would likely prove beneficial to a noncompliant ADHD child, but might not demonstrate behavioral improvement in an ADHD child without oppositional symptoms.

The failure to address the core symptoms of ADHD children in parenting interventions may reflect inadequate theoretical validity surrounding the ADHD diagnosis and poor symptom definitions. Current conceptualizations of ADHD do not yet adequately explain why ADHD

children are often noncompliant or why they place such strains on their family. Barkley's (1997a) conceptualization of ADHD most closely leads to theoretical suggestions for parenting interventions. Barkley (1997a) recommended the establishment of a "prosthetic," or structured home environment in which situational contingencies are hypothesized to increase an ADHD child's use of internalized inhibitory control. However, as stated earlier, the establishment of this structured home environment has not been shown in empirical studies to affect the core symptoms of ADHD. Without sufficient theoretical conceptualization, goal-directed treatment components cannot be designed which specifically address the needs of ADHD children and their parents. This lack of theoretical validity might explain why parenting interventions for ADHD children most commonly are constructed identically to those parenting interventions designed for Oppositional Defiant Disordered (ODD) children. The existing research does not reveal what components might be added to the traditional parent training program in order to address those needs of ADHD children, as distinct from those of ODD children.

Treatment protocols are needed which empirically test Barkley's (1997a) theories and which are designed specifically to target symptoms of ADHD children. Furthermore, differential treatment outcomes must be examined for ADHD children with varying degrees of oppositionality. Treatment effects should not be generalized across ADHD and ADHD/ODD children. More specific treatment outcome studies could shed light upon theoretical explanations and definitions of ADHD child behavior that might lead to those hypotheses necessary to derive ADHD-specific interventions. The following section describes a unique treatment

protocol for ADHD children and their families developed by Pisterman and colleagues (1992a, 1992b) which was designed to address both oppositionality and inattention.

Pisterman's Compliance and Attention Training Model

Pisterman and colleagues (1992a, 1992b) broadened a program adapted from Barkley's (1987, 1997b) and Forehand and McMahon's (1981) parenting interventions to include not only a focus on child compliance, but an additional emphasis on child inattention. The stated goal of this research was to evaluate whether parent-mediated behavioral intervention could ameliorate some core deficits of ADHD in preschool children besides those associated with noncompliance. Pisterman et al. (1992a, 1992b) designed a parent training intervention based upon a compliance model which included the goal of increasing children's on-task behavior.

The Pisterman et al. (1992a, 1992b) treatment protocol is designed to consist of 12 group parent training sessions for parents of ADHD children between 3 and 6 years of age. All behavioral instruction is provided by modeling and role-playing techniques. Group sessions are supplemented for each parent with two videotaped individual in-clinic instructional sessions. During these sessions, parents review prerecorded videotapes of interactions with their child in either compliance or academic situations and are given individual feedback.

Treatment begins with a standard parent-training program for compliance, operating under the assumption that establishing compliance is an essential first step in altering degree of on-task child behavior.

Following an introduction to ADHD, group sessions focus on reinforcing compliance and implementing a time-out procedure for noncompliance. Following the emphasis on compliance training, parents are trained to implement these same behavioral strategies to their child's inattention during structured academic situations. For instance, parents are taught to use effective commands, reinforcement, shaping, and time-out to gradually increase sustained periods of their child's on-task behavior.

Similar to previous parent training studies with ADHD children, Pisterman et al. (1992b) found that their treatment program significantly increased rates of child compliance and parental praise, and decreased task completion time and parental negative behavior. Regarding parental functioning, parents completing the treatment groups reported significantly less parenting stress and more sense of parenting competence (Pisterman et al., 1992a). Nevertheless, the study failed to demonstrate significant treatment effects on any of the child attention variables. Consequently, it appears that the attention training components of this study were ineffective in increasing focused child task attention. The authors suggest that nonsignificant findings may have been the result of maturation characteristics specific to the variable and unpredictable attention levels in preschool children. Extremely high standard deviation scores observed on attention measures further support this unpredictability and variability (Pisterman et al., 1992b).

Evidence of Core ADHD Symptom Alteration

Despite the nonsignificant results demonstrated by Pisterman et al. (1992b), previous behavioral interventions have been found to influence attentive behavior in ADHD children. These behavioral interventions are most commonly utilized in the classroom with school-age children. For instance, the Attention Training System (or ATS; Gordon, Thomason, Cooper, & Ivers, 1991) is an automatic feedback delivery system regulated by a classroom teacher to deduct reinforcement points for off-task behavior from an electronic box on an ADHD child's desk. This system has been found to decrease observed off-task classroom behavior when alone (Gordon et al., 1991) and when supplemented with teacher modeling and prompting on-task behavior (DuPaul, Guevremont, & Barkley, 1992). However, treatment effects gained by the ATS appear to be temporary (Gordon et al., 1991).

ADHD child on-task behavior also appears to be within the control of experimenter, peer, teacher, and/or self-administered reinforcement. In these studies, "off-task behavior" is typically defined as any eye movement away from the designated task and individual reinforcement takes a variety of forms. For example, Northup and colleagues (Northup, Broussard, Jones, George, Vollmer, & Herring, 1995) found that out-of-seat behavior and inappropriate vocalizations were decreased via teacher and/or peer administered reprimands. These target behaviors also decreased when positive peer attention was made contingent upon their absence (Northup et al., 1995). Bowers, Clement, Fantuzzo, and Sorensen (1985) found that ADHD children, when cued to monitor their attention, could effectively self-administer reinforcement (5 cents for each on-

task interval). In addition to positive reinforcement, aversive stimulation appears as effective, if not more effective in its influence on attentive task behavior. Worland (1976) found that only negative feedback for off-task behavior (here a sounding burglar alarm) successfully decreased this behavior to be compatible with that observed in control subjects.

Empirical studies utilizing behavioral strategies to increase on-task behavior among ADHD children often find no accompanying increase in academic performance (e.g., Hoza, Pelham, Sams, & Carlson, 1992). However, many studies have found that the reinforcement of accurate task performance leads to a decrease in the number of task-related errors committed by hyperactive children (e.g., Ayllon, Layman, & Kandel, 1975; Hoza et al., 1992; Williams & Lahey, 1977). In addition, Hoza et al. (1992) found that reinforcing academic performance (e.g., percentage of work completed and accuracy) did not increase observations of disruptive behavior. Ayllon et al. (1975) even found decreases in hyperactive behaviors with the sole reinforcement of correct academic responding. This research suggests that task accuracy and completion are important to measure when examining ADHD child off-task behavior. In fact, these variables may be the most important in maintaining optimal academic performance.

This empirical literature indicates the malleability of off-task, out-of-seat, and impulsive behavior in hyperactive children through a variety of behavioral techniques. It also appears that these behaviors may be modified by directly targeting their occurrence or by indirectly targeting academic accuracy and/or task completion. If ADHD child

behaviors can be altered by teacher, peer, and computer administered procedures, these behavioral strategies should function similarly when implemented by parents.

Need for Single-Subject Design Outcome Research

Most parenting interventions with ADHD children have been empirically evaluated with an experimental group design. However, those studies utilizing a single subject design (Henry, 1987; Pelham et al., 1983; Pollard et al., 1984) or small sample size (Cocciarella et al., 1996) have noted variability in the outcomes of families participating in parent training programs. A few studies additionally show evidence of individual variability in the extent of endorsed symptom improvement (Cocciarella et al., 1996; Henry, 1987). As would be expected, some parents show sudden decreases in their ratings of child problems with the introduction of treatment, while other show little if any change. Pelham et al. (1983) showed great variability resulting from behavior therapy treatments; anywhere from 45 to 80 percent of subjects showed post-treatment improvement depending on which outcome measure was examined. The multiple baseline method utilized by Henry (1987) also demonstrated that some children responded quickly to parenting intervention, while others showed little, if any, decrease in noncompliance at treatment termination. The relationship between individual variability and treatment response remains to be more thoroughly investigated. Treatment outcome variability is likely due to a number of factors, one of which may be the degree of presenting child oppositional behavior. This interaction between subject characteristics

and outcome variability may best be examined within the context of a single subject design.

Many authors (e.g., Kazdin, 1997) have suggested that future research be focused on the effectiveness of individual treatment components. In order to examine these intertreatment differences, large subject numbers must be utilized to gain sufficient power (Cohen, 1988; Lipsey, 1990). In most settings, designing such a study would be impossible. These studies will be best performed at a national coordinated level with access to large clinical samples. Meanwhile, different important and equally relevant questions may be answered with sufficient power via single subject research. Peterson and Bell-Dolan (1995) recently emphasized the need in child/adolescent psychotherapy research for single-subject evaluation methods. Single-subject multiple baseline designs may be implemented with reduced cost to the researcher, eliminate the need for a no-treatment control group, and avoid the geographic difficulties associated with random subject assignment (Peterson & Bell-Dolan, 1995). Single subject designs may be especially helpful in examining empirical questions related to subject response. For instance, what are the characteristics of those children who do increase on-task behavior with increased structure at home? By identifying characteristics of clients who do and do not improve with treatment, programs may be developed to more effectively address the needs of specific clients.

Single subject research is a practical means to assess whether a particular intervention has the potential of being effective for a particular problem or population. There are several advantages of the

single subject design. First, by using a subject as his/her own control in successive replication, the single subject design increases the strength of treatment effects generalizing to other subjects (Hersen & Barlow, 1974; 1984). The single subject design also bypasses the variability that is normally due to intersubject differences in group designs. This is due in part to the fact that the variables affecting the behavior of only one subject can be more highly controlled so that the effects of treatment conditions in isolation can be seen (Christiansen, 1977).

One of the most widely used single case designs is the multiple baseline design. This design provides an increase in experimental control over a within-series design without requiring a reversal phase. This is obviously beneficial in treatment studies where the withdrawal of treatment would be impossible, impractical, and/or unethical (Kazdin, 1989). The multiple baseline design consists of several replications of an A-B design with baselines of differing lengths. There are several different types of multiple baseline designs: multiple baseline across subjects, across settings, and across behaviors (Barlow & Hersen, 1984).

The multiple baseline across subjects design employs the same target behavior(s) of several different subjects (Barlow & Hersen, 1984). Initial baseline data are gathered on the target behavior. After no increasing or decreasing trend is observed under baseline conditions (i.e., steady state responding), the independent variable is applied to one of the subjects while baseline conditions remain in effect for the other subjects (Barlow & Hersen, 1984). It is a

variation of the multiple baseline across subjects design that is to be implemented in the proposed study.

Purpose of Current Study

Pisterman et al. (1992a, 1992b) examined the effects of compliance and attention training on preschool ADHD children in the context of a group experimental design. The current study evaluated Pisterman's (1992a, 1992b) intervention with school-age ADHD children in the context of a multiple baseline across subjects design. This design allowed for the examination of previously noted individual treatment outcome variability noted in the families of ADHD children. This study also attempted to specifically examine the effects of this parenting intervention on laboratory-observed and parent-rated levels of ADHD child noncompliant and inattentive behavior. Unlike many previous studies, this study incorporated both behavior rating scales and laboratory observations to assess the generalizability of treatment results across measures. In addition, this study included formal implementation evaluation procedures to insure treatment integrity as well as valid outcome results. Finally, given the importance of familial variables, this study also evaluated the influence of parent characteristics (e.g., psychopathology and stress) on observations and ratings of treatment related changes.

Based upon previous empirical findings, three broad hypotheses were made regarding study results. First, it was hypothesized that reduced levels of child noncompliance would be observed during the intervention's emphasis on compliance, while no concurrent decreases

would be observed in levels of ADHD child inattention, or off-task behavior. Increases from baseline levels of observed child inattention were not anticipated until the intervention's emphasis turns to structured academic tasks. Second, it was hypothesized that decreases in parent behavior rating scales on conduct and attention problems would be noted concurrent with behavioral observations in response to treatment. Finally, it was hypothesized that the parenting intervention would reduce perceived levels of parenting stress and have mixed effects on reports of parental psychopathology.

II. METHOD

Subjects

Four children diagnosed with ADHD-Combined Type between the ages of 8 and 10 years and their parents were included in this investigation. In addition to an ADHD diagnosis, all children included in the study demonstrated problematic oppositional behavior at home. Seven out of nine children referred for the study met inclusionary criteria, but three were excluded from data analysis because of incomplete data. All families participating in the study requested parenting services either at a local organization meeting for the parents of ADHD children (i.e., CHADD), Auburn University Psychological Services Center (AUPSC), or by other participant recommendations to join treatment. In each participating family, the mother served as the primary parenting treatment participant; however, fathers attended treatment sessions in two of the families. Characteristics of the four participating child subjects can be found in Table 1. Table 2 contains information on family characteristics.

Screening Process

ADHD Diagnosis. Several steps were taken to validate all potential child participants' ADHD-Combined Type diagnoses. First, all children were previously diagnosed with ADHD through AUPSC, a pediatrician, or other mental health professional. Behavioral ratings of ADHD symptoms were assessed via the Behavior Assessment System for

Table 1

Descriptive Characteristics of Child Participants

Participant	Age (years, months)	IQ Estimate ^a	Math Grade Level ^b	Medication Status	Academic Problems ^c
Mike	9,6	106	3.3	Methylphenidate	Dyslexia
Brant	8,11	106	4.6	Methylphenidate	None
Jacob	10,7	115	5.9	None	None
Troy	10,10	97	3.8	Methylphenidate	Math Learning Disability

^a Estimate based upon Vocabulary and Block Design subtests of the Wechsler Intelligence Scale for Children, Third Edition (WISC-III; Wechsler, 1991).

^b Operations subtest grade equivalent of the revised KeyMath (KeyMath-R; Connolly, 1997).

^c According to parent report during a semi-structured interview.

Table 2

Descriptive Characteristics of Participant Families

Participant	Age (years)	Marital Status	Family Income (per year)	Two Primary Child Behavior Problems (according to initial parent interview)
Mike				
Mother	44	Single	\$91,000	(1) Whining (2) Lengthy homework completion
Brant				
Mother	32	Married	\$50,000	(1) Talking back to parents (2) Lying
Father ^a	40			
Jacob				
Mother	34	Married	\$75,000	(1) Physical Aggression (2) Smart Talk
Father ^a	41			
Troy				
Mother	35	Married	\$40,000	(1) Not following instructions (2) Lengthy task completion time
Father	37			

^a Participated in some treatment sessions.

Children (BASC; Reynolds & Kamphaus, 1992) utilizing the Parent Rating Scale (PRS). The BASC-PRS is an objective personality measurement scale for children aged 4-18 years. Dimensions on the scale include Aggression, Attention Problems, Atypicality, Withdrawal, Adaptability, Leadership, and Social Skills. Composite scores are available of Internalizing Problems, Externalizing Problems, and Adaptive Skills. The BASC has substantial normative data in both normal and clinical populations (Reynolds & Kamphaus, 1992) as well as sufficient internal reliability and external validity (Flanagan, 1995). Those children who received parent ratings above the 90th percentile ($T > 65$) on both the Attention Problems and Hyperactivity dimensions of the PRS were included for participation.

All parents also completed the Disruptive Behavior Disorders Rating Scale (DBDRS; Barkley, 1997b). The DBDRS-PF was designed to obtain ratings of the DSM-IV symptoms for ADHD and ODD. Age and gender-based norms for the ADHD items of this scale have been collected (DuPaul, Power, Anastopoulos, Reid, McGoey, & Ikeda, 1996). The ADHD scale possesses high internal consistency, test-retest reliability, and external validity (DuPaul et al., 1996). Norms have not yet been developed for the ODD items on the DBDRS; however, Barkley (1997b) suggests that four or more highly rated items may indicate the presence of Oppositional Defiant Disorder. For the purpose of this study, those children who were rated above the 93rd percentile (1.5 standard deviations above their same-aged and gender norm) on the Inattention and Hyperactive/Impulsive items of the DBDRS were included.

ADHD diagnoses were additionally confirmed via a semi-structured interview which incorporated DSM-IV diagnostic criteria for ADHD (Barkley, 1997b). This interview additionally helped to determine each child's level of psychological functioning, academic functioning, home behavior problems, and medical history.

Home Noncompliance. In order to participate in the study, child subjects must have demonstrated parent-reported difficulties with home rule compliance during the parent interview. To further assess parent-perceived home behavior problems, all parents completed the Home Situations Questionnaire (HSQ; Barkley, 1997b). The HSQ consists of 16 situations where behavior problems might be observed (e.g., during mealtime, when asked to do chores). Parents are asked to indicate whether or not that situation is problematic and the severity of the behavior. Age and gender-based normative data have been collected for the HSQ (Altepeter & Breen, 1989, 1992; Barkley & Edelbrock, 1987). The HSQ has further demonstrated stable test-retest reliability, internal consistency, and external validity (Altepeter & Breen, 1989). All child subjects were rated above the 93rd percentile (1.5 standard deviations above their same-aged and gender norm) on the HSQ.

Cognitive Functioning. In order to insure that child subjects understood intervention procedures, children with cognitive deficits were excluded. Intellectual functioning was determined by administering the Vocabulary and Block Design subtests from the Wechsler Intelligence Scale for Children, Third Edition (WISC-III; Wechsler, 1991). These subtests were used due to their high correlation with the Full scale IQ and high reliability (Sattler, 1992). Children with estimated Full

Scale deviation quotients less than 80 were excluded from participation. All child participants further showed no evidence of deafness, blindness, severe language delay, cerebral palsy, epilepsy, autism, or psychosis as established through their medical history, child observations, and parental consultation.

Medication Status. If a child was taking psychotropic medication, the parent was asked to keep the medication regimen consistent throughout the study. Mike (20 mg morning, 15 mg noon, 10 mg evening), Brant (5 mg morning and noon), and Troy (10 mg morning and noon) were taking Methylphenidate during the study. Baseline, treatment, and follow-up sessions were scheduled for the same days (Monday/Wednesday or Tuesday/Thursday) and evening times per family during the study to insure consistent residual or active medication effects. Rating scales were completed based on nonmedicated child states.

Setting

All observation sessions and child participation treatment sessions took place in a playroom equipped with microphones and a one-way observation mirror that concealed a video camera. A standard set of toys appropriate for children between the ages of 6-10 years (O'Conner, 1991) were provided in the playroom. These toys included: coloring books, crayons, colored pencils, white paper, LEGO building blocks, a dolphin water/ring game, toy soldiers, a "Barbi" doll, 3 toy cars, a travel "Spirograph," an "Etch-A-Sketch," dominos, 2 electronic hand-held games ("Centipede" and a dinosaur game), an "Old Maid" card game, "Checkers," "Jenga," "Battleship," and an electric "Hot Shot" basketball

game. All parent didactic treatment sessions, treatment homework review, and written questionnaire completion took place in a standard interview/treatment room adjacent to the playroom. This room was also equipped with a one-way observation mirror to be used to observe occasional treatment sessions.

Instruments and Tasks

Academic Achievement. Experimental procedures required that all child participants complete a grade-appropriate standardized mathematics task. In order to establish a grade level of academic performance in mathematics, all child subjects were administered the revised KeyMath (KeyMath-R; Connolly, 1997) during their first session. The KeyMath-R is an individually administered assessment instrument of mathematics concepts and skills. The KeyMath-R evaluates three major mathematics domains: basic concepts, operations, and applications. For the purposes of this study, only the operations subtests were administered (addition, subtraction, multiplication, division, and mental computation). The KeyMath-R provides standardized norms for children kindergarten to 12th grades (Connolly, 1997). Standard scores and percentile rankings may be calculated for each individual subtest by grade or age. In addition, a total grade/age equivalent may be calculated for the entire operations domain.

Parent Stress and Psychopathology. Research over the past several years indicates that the parents of ADHD children report more stress in their families and parental role than those of normal or clinic-referred non-ADHD children (e.g., Anastopoulos et al., 1992). Parenting stress

levels also appear to be positively affected by parenting interventions (e.g., Pisterman et al., 1992a). Consequently, all parent participants were administered the short form of the Parenting Stress Index (PSI-SF; Abidin, 1995) before, after, and midway through treatment. Higher total scores on the PSI-SF represent higher perceived levels of stress in that parent's role. Normative data have been collected for the PSI-SF which yield cutoffs for distressed and nondistressed parents. Research on the PSI-SF has further demonstrated high test-retest reliability (Abidin, 1995; Roggman, Moe, Hart, & Forthun, 1994) and alpha coefficients (Abidin, 1995).

Parents of ADHD and/or oppositional children have also demonstrated higher rates of psychopathology than children from non-clinical populations (e.g., Breen & Barkley, 1988). Furthermore, psychological difficulties may affect a parent's responsiveness to behavioral parent training programs (Forehand & McMahon, 1981). In order to better assess parent psychological health and its potential impact on treatment outcome, the Personality Assessment Screener (PAS; Morey, 1997) was administered to all parent participants before and after treatment. The PAS is organized to produce a total score and 10 different domains of clinical problems (negative affect, acting out, health problems, psychotic features, social withdrawal, hostile control, suicidal thinking, alienation, alcohol problem, and anger control). The 10 PAS items were selected to represent the major domains of the measure's parent instrument, the Personality Assessment Inventory (PAI; Morey, 1991). PAS norms are presented separately for clinical and community groups across age, gender, and race (Morey, 1997). High test-

retest reliability coefficients, sufficient internal consistency, and external validity have been demonstrated (Morey, 1997).

Treatment Satisfaction. At the end of the parenting intervention, all parent participants completed a shortened version of the Parent's Consumer Satisfaction Questionnaire (PCSQ; Appendix A) originally designed by Forehand and McMahon (1981). The full client satisfaction measure requires clients to provide quality ratings on the overall treatment program, teaching format, usefulness and difficulty level of individual treatment components, and therapist effectiveness. Research on client satisfaction measures has suggested that clients' overall program judgments are highly correlated with their ratings of individual program components (McKillip, 1987). Since clients do not typically provide reliable information on needs addressed by individual treatment components, the adapted PCSQ used in this study included only Forehand and McMahon's (1981) sections on overall program satisfaction and therapist effectiveness.

Academic Task Observation. An academic task observation was conducted for each subject during every baseline, treatment, and follow-up session. During the academic task, the mother was asked to sit with her child at the table in the playroom while he completed math problems just like she would during "homework time" at home. All toys were cleared from the playroom table, but remained within sight of the child on their storage shelves. The experimenter gave the ADHD child the following instructions: "I now have some schoolwork for you to do. Sit here on your bottom at this table, stay in the chair, and complete as many math problems in this packet as you can. Do not skip any problems."

Do not play with any of the toys and do not leave your seat during this work time. I will be back in a while to see how much work you have done." Each academic task period was 10 minutes. Parents were instructed to have their child use the bathroom prior to the observation periods. Consequently, if the child asked to go the bathroom the parent was instructed to have the child wait until the academic observation period was over.

Barkley (1990) recommended that math problems for academic observation be selected at one grade level below the child's current abilities to avoid inattention due to problem difficulty or boredom. Consequently, math problem packets were created with randomly selected addition and subtraction problems drawn from grade-specific elementary mathematics workbooks at a difficulty level approximately one grade level below the child's current mathematics academic achievement as measured by the KeyMath-R (Connolly, 1997). Elementary math workbooks typically ordered problems with increasing difficulty. To maintain consistent difficulty levels for math problems throughout observation sessions, selected problems were pulled from all portions of the workbook and randomly ordered and typed into newly created math sheets. Within a specific math sheet problem difficulty was also randomized. Thirteen math sheets were created for each grade level. These sheets were numbered and ordered consecutively from 1 to 13. Each child began with math sheet number 1 and completed as many sheets as possible each observation period, starting the next observation period where he had previously left off. When the child completed math sheet 13, the next sheet was math sheet 1. Children completed anywhere from one-half a

math sheet to 4 math sheets per observation period. For a sample math sheet see Appendix B.

Academic Alone Generalization Probes One academic task observation period without parent supervision was conducted at baseline, mid-treatment, posttreatment, and each follow-up assessment, for a total of 5 observation periods. During this observation period instructions were identical to the parent supervised academic task; however, children were left alone to complete math problems in the playroom. Treatment practice sessions targeting child attention were conducted with parent supervision. Consequently, academic observations without parent supervision served as generalization probes to measure treatment effects in a less controlled situation.

Parent-Child Observation Task. A parent-child task observation period was conducted at each baseline, treatment, and follow-up session. This observation period was conducted in a manner similar to the "Parent's Game" described by Forehand and McMahon (1981). During this interaction parents were asked to issue a series of commands for their child to follow. In order to insure that various parent study participants utilized commands of similar frequency and magnitude, parents' commands were prompted during task observations via a "bug in the ear" technique. During each observation, the experimenter instructed the parent from behind a one-way mirror to have the child play with a specific toy. After 2 minutes, the parent was prompted to have the child play with a different toy. In between specific command prompts, the parent was instructed to have the child sustain his/her compliance to the initial command. For instance, if the child was

instructed to play with the "LEGOs," he/she should have continued to play with the "LEGOs" until issued a new command.

During each 12-minute observation period the parent was issued 6 specific commands. These commands included the following: "Play with the Legos for a while," "Play with the Etch-A-Sketch for a while," "Play with the Spirograph for a while," "Draw with the pencils and blank paper for a while," "Play with the dolphin water game for a while," and "Play with the toy soldiers for a while." Six different command lists were created in which commands were placed in a randomized order. Each subject's beginning command list was selected randomly; the subject subsequently proceeded through the command lists in numerical order (i.e., command list number 3, 4, 5, 6, 1, 2, 3, etc.).

Prior to this parent-child interaction, parents were given the following instructions: "During the next 12 minutes, you will hear me issue a command through the listening device in your ear that you are to say aloud to your child. This command will demand that your child play with a specific toy. For instance, you may hear me say 'play with the Legos for a while.' You are to have your child begin to play with that specific toy and continue to play with that toy until you hear me give you another command. I will give you a new command approximately every 2 minutes. There are 6 total commands." Parents were reminded of these instructions prior to each observation.

As the intervention progressed, 3 parents occasionally used the time-out procedure when their child failed to initiate play with a new designated toy. During these instances, the experimenter waited until the child's time-out was finished and the child had played with the

originally designated toy. After this, the experimenter issued a new command to the mother. This procedure was followed to insure that the child was not allowed to escape compliance to a previous command following time-out by the experimenter's new prompt. There was no communication between the parent and experimenter during this time.

Free Play Generalization Probes. One parent-child free play period, or "Child's Game" (Forehand & McMahon, 1981), observation was conducted at baseline, mid-treatment, posttreatment, and each follow-up assessment, for a total of 5 observation periods. Free play situations were not utilized as a means to target child behaviors during treatment practice sessions. Consequently, free play observations served as generalization probes to measure treatment effects in a less restrictive, and less rehearsed situation. During the free play observation period parents were told to "play with your child as you would at home and feel free to use any of the toys. Allow your child to play with anything he/she chooses. Your child should make up the rules for this interaction." Free-play observation periods were 10 minutes.

Target Behaviors and Observation System

Response Definitions for Child During Parent-Child Interactions.

There were two primary categories of dependent variables for child behavior during parent-child free play and task observations: child noncompliance and negativity. Child behaviors during the structured parent-child interaction were coded using a system similar to those designed by Forehand and McMahon (1981) and Wahler (1975) to follow prompted commands. In the current system, each 2-minute command period

was broken down into twelve 10-second coding intervals. In the first interval, the coder marked whether or not the child initially complied within 5 seconds of the parent's original command. In the next eleven intervals, compliance was coded if the child initiated or sustained compliance with the parent's original command. Any incidence of noncompliance during a 10-second interval was recorded as "noncompliance." Incidents of child negative behavior were tallied as they occurred, regardless of the timed interval. Complete definitions of child behavior categories can be found in Table 3.

During free play probes, the same child behaviors were coded; however, noncompliance coding was changed to account for the lack of command prompts. For this purpose, the coding sheet was divided into 5 one-minute intervals. In each interval, every occurrence of noncompliance to specific parent-initiated commands was recorded. Noncompliance was similarly defined as the failure to initiate compliance to the parent command within 5 seconds of the command utterance. The observer coding form used during the parent-child task observation can be found in Appendix C. The variation of this form to be used during free play probes can be found in Appendix D.

Procedural Integrity of Parent Behavior. In addition to recording child behavior during free play and task observations, experimenters recorded parent interactions with the child as a measure of procedural integrity. Approving responses (i.e., praise), parent commands, and negative responses (i.e., reprimands for behavior) were recorded. In addition, parent repetitions of the original prompted command were recorded. All parent behaviors were recorded with each individual

Table 3. Child and Parent Behavior Categories and Definitions for Observations of Parent-Child Interactions

Behavior Category	Definition
Initial Compliance (Icpy)	This behavior will be recorded when the child leaves one activity in which he was engaged within 5 seconds after the maternal command and initiated a response toward the toy specified in the command. If the child fails to initiate a new activity within the 5 seconds, this will be scored as Initial Noncompliance (Incpy).
Child Compliance (Cpy)	Scored during a 10-second interval if the child has (a) initiated a response toward the toy specified in the command and played with that toy for the remainder of the interval or (b) played with the specific toy for the entire 10-second interval. Compliance is scored ONLY in reference to the original command.
Child Noncompliance (Cnpy)	Scored during a 10-second interval if the child either fails to initiate compliance to a specific command or fails to continue playing with the command-specified toy. Any incidence of noncompliance during a 10-second interval will result in that interval being scored as "noncompliant." Noncompliance is scored ONLY in reference to the original command (e.g., "Play with the Etch-A-Sketch).
Child Negative (Cn)	Child engages in verbal or nonverbal behavior that conveys refusal, anger, or discouragement in direct response to a parent's original command or repeat command. This category is coded with each separate behavior occurrence. Example: "No!" to a parent's command, whining, saying "I don't want to."
Parent Command (C)	Parent issues a statement that contains imperatives or indirectly stated or implied commands that may be stated as interrogatives. Example: "Come here and ..." or "Will you hand me..."
Repeat Command (RC)	Any repetition of the command originally prompted by the experimenter during a 10-second interval. Example: "I asked you to play with the Legos," or "I said it's time to play Legos for a while."
Parent Approval (A)	Verbal and nonverbal actions that convey parental approval, encouragement, or acceptance of the child's activities. Scored with each individual occurrence. Example: "OK," "Good," clapping.
Parent Negative (Pn)	Verbal statements and nonverbal actions conveying discouragement, nonacceptance, or disapproval of the child's activities. Scored with every occurrence. Example: "No, don't do that."

occurrence. The full definitions of these parent behavior categories can also be found in Table 3.

Response Definitions for Child During Academic Observations. ADHD children's behavior during the parent-supervised and unsupervised academic task situation was coded using the ADHD Behavior Coding System designed by Barkley (1990). In this system, behaviors are coded using five behavioral categories: off task, fidgeting, out-of-seat, vocalizing, and plays with object. Each of these behavior categories are operationally defined with examples in Table 4. In this coding system the coder checks every 15-second interval on the coding sheet (shown in Appendix E) whether any of the five behavior categories were observed. This coding procedure yields 40 possible occurrences during a 10-minute observation period for each of the five behavior categories. Percentage of occurrence was calculated for each category. Intercoder agreement in previous studies using this coding system was .77 to .85 (Barkley, 1990).

In addition to direct observations of child behaviors during the restricted academic setting, a mean time-on-task (i.e., the average duration of all periods of on-task behavior) was recorded for each observation period (Pisterman, 1992b). From behind a one-way observation mirror, observers timed the child's "on task" behavior with a stopwatch. The stopwatch was restarted each time the child's eyes broke contact with the math problem sheets. This observer also recorded the number of math problems completed during each academic task observation period, as well as the number of correctly completed

Table 4. Behavior Categories and Definitions for Observations of Parent-Supervised and Unsupervised Academic Task Periods

Behavior Category	Definition
Off Task	Child interrupts his/her attention to the task for <u>3 or more seconds</u> ^a to engage in some other behavior. Attention is defined as visually looking at the task materials. If the child breaks eye contact with the math problems, then he/she is coded as off task.
Fidgeting	Any repetitive, purposeless motion of the legs, arms, hands, buttocks, or truck. It must occur at least twice in succession to be considered repetitive. Examples: kicking legs back and forth, tapping a pencil.
Vocalizing	Any vocal noise or off-task verbalization made by the child. Examples: speech, humming, making odd mouth noises.
Plays with Object	Touching any object in the room besides the table, chair, math problems, and pencil.
Out of Seat	Any time the child's buttocks break contact with the flat surface of the seat.

^a This specification was added to Barkley's (1990) description of the coding system.

problems. These recordings were used to represent measurements of task efficiency and accuracy.

Data Collection. Free play, parent-child task, and academic task observations were videotaped and later coded by trained graduate or undergraduate observers. Coding intervals were integrated into videotaped observations by an audiotape that played along with the videocamera in the observation room. During the attention coding periods, an audiotape marked 40 15-second intervals (i.e., "begin interval 1...begin interval 2"). An audiotape marked 10-second intervals for parent-child task observation and 1-minute intervals during free play periods. These audiotaped intervals insured that all coders viewed common intervals during videotape observation for increased reliability across independent coders.

Coding assignments were made randomly across baseline, treatment, and follow-up sessions. As much as possible, coders were blind to subject identification and observation purposes; however, several coders verbally noted behavioral improvements observed in later versus earlier recorded videotapes. All observers were trained for 2 months (6-10 hours per week) using pilot subject data until reliability exceeded 80% for each coding category. Weekly 1-hour group meetings were held to address observer drift and reliability problems. Videotape reliability checks were assigned randomly throughout study implementation by the graduate and senior undergraduate coder and were not conducted in the order of treatment sessions.

Interobserver Agreement. A second coder independently collected reliability data for an average of 35% of the parent-child interaction

assessment sessions across conditions (range 32% to 39% across children). Interobserver agreement was calculated on a point-by-point basis (Kazdin, 1982) for occurrence of child and parent behaviors. Agreement was computed by dividing the total number of agreements on occurrence multiplied by 2, divided by the number of agreements plus disagreements. This number was then multiplied by 100. Average agreement was 96% for initial child compliance, 92% for noncompliance, 66% for child negative behavior, 70% for parent command, 74% for parent repetition of the original command, 72% for parent approval, and 51% for parent negativity. Nonoccurrences were not scored for reliability purposes. Lower reliability ratings for parent and child negative behavior were due to low behavior occurrence. Results from parent negativity data were not analyzed due to insufficient data reliability.

Reliability was similarly calculated for 32% of the academic task assessment sessions across conditions (range 26% to 41% across children). Average agreement was 81% for off-task behavior, 92% for fidgeting, 71% for off-task vocalizations, 83% for plays with task-irrelevant objects, and 60% for out-of-seat. Lower reliability for out-of-seat observations was due to low base rate occurrence.

Design

A multiple baseline design across subjects was utilized (Barlow & Hersen, 1984; Kazdin, 1982). The treatment began after obtaining baseline assessments for each child participant on the 2 primary target variables, degree of noncompliance and academic off-task behavior. Subjects in each baseline condition were run simultaneously (i.e., Mike

and Brant began treatment in the same week, as did Jacob and Troy). Each baseline served as a standard by which to compare the child's improvement or lack of improvement. Given treatment was introduced sequentially across subjects, it was predicted that any systematic changes in a subject's treated behaviors would be attributable to the treatment, and not to extraneous or nonspecific variables.

Procedure

All participating families first made contact with the experimenter by phone or written referral. After this initial contact, each primary caretaker was interviewed briefly by phone to assess basic information about the family (e.g., target child age, date of child's diagnosis, reason for seeking parenting intervention, and child care needs during treatment). A first appointment was also established at this time. Upon arrival to the playroom and laboratory, each parent received instructions for the day and a thorough explanation of the study. Following this explanation, all participating parents and children completed informed consent documents. During this first appointment, the semi-structured parent interview (Barkley, 1997b) was conducted and the parent completed the BASC, DBDRS, and HSQ. The child was administered the WISC-III Vocabulary and Block Design subtests and KeyMath-R Operations subtests. This information was used to establish inclusionary criteria and the preparation of appropriate math tasks during academic observation. A parent-child interaction observation was also conducted at the first assessment session (see below).

Baseline. For those subjects in the first condition (Mike and Jacob) baseline consisted of minimally four sessions following the initial appointment. For those in the second baseline condition (Brant and Troy) baseline was minimally five sessions. During the second baseline assessment session, all parents completed the PSI-SF, PAS, and a short test of behavioral knowledge (see "implementation evaluation" section below for further explanation). Each baseline session from this point included a videotaped observation of the parent-child task interaction and supervised academic task. The third baseline session included the free play and unsupervised academic task generalization probes.

Treatment for each subject began only after baseline stability or an increasing trend was observed for both child noncompliance and off-task behavior. An increasing trend was deemed acceptable due to the opposite direction being predicted during treatment. "Stability" was defined as occurring when 80-90% of the data points fell within a 15% range of the mean level of all baseline data point values. Similarly, a trend was defined as occurring when 80-90% of the data points fell within a 15% range of the trend line.

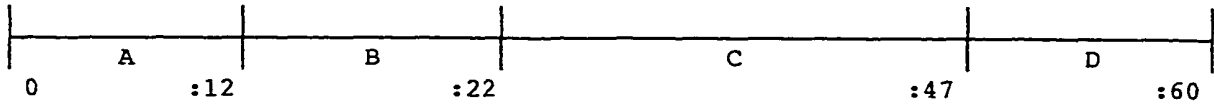
Treatment. The present study was designed to evaluate the treatment protocol implemented by Pisterman et al. (1992a, 1992b) with ADHD preschool children via a single-subject, individually implemented treatment evaluation design. In order to best accommodate an individualized treatment administration for school-aged children, Pisterman's manual was altered in a few ways. First, all treatment components specific to the needs of preschool children were eliminated

(e.g., tips for safety-proofing your home). Similarly, treatment manual illustrations and examples were altered to be relevant to the parents of school-aged children. Pisterman's treatment manual was designed to provide didactic "parent-only" group presentations with 2 family "in clinic" practice sessions. In the present study's design, all treatment sessions were presented individually to participating parents. In addition, child subjects were present at all experimental sessions to allow an opportunity for parent practice following each session.

As Pisterman et al. (1992a, 1992b) recommended, two in-clinic practice sessions were held, one following each compliance and attention focus of treatment. Pisterman et al. (1992a, 1992b) did not utilize a bug-in-the-ear coaching technique during clinic practice sessions. Original manual practice sessions included parent observation of a baseline videotape followed by a therapist's observation of parent-child interactions with oral feedback. Given our access to this device and the documented usefulness of such a technique (e.g., Eyberg & Matarazzo, 1980), bug-in-the-ear coaching was incorporated into ongoing parent feedback during the observed parent-child interaction. Videotape observations were conducted as originally recommended.

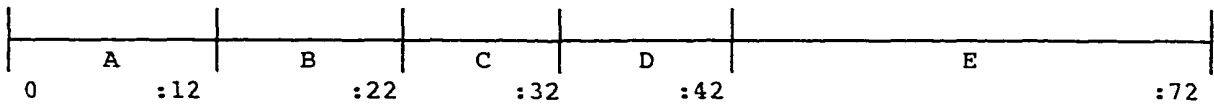
The structure of individual parent treatment sessions is outlined by time in Figures 1a and 1b. Most treatment sessions began with a 12-minute parent-child task observation conducted in the playroom, followed by a 10-minute parent-supervised academic task observation. The participating parent and child then separated. The child participated in free play (approximately 20 minutes) supervised by an undergraduate research assistant. In a separate room, the parent and primary

Figure 1a. Sequence Within Treatment Sessions - Breakdown by Minutes



- A (12 minutes) - Parent-child task observation (Playroom)
- B (10 Minutes) - Parent-supervised academic task observation (Playroom)
- C (25 minutes) - Review last session, homework, and didactic presentation of novel treatment components with parent (Tx Room)
Child free time (Playroom)
- D (13 minutes) - Modeling and role play of novel treatment components with parent and child (Playroom)

Figure 1b. Sequence Within Pre, Mid, Post, and Follow-Up Treatment



- A (12 minutes) - Parent-child task observation (Playroom)
- B (10 minutes) - Parent-supervised academic task observation (Playroom)
- C (10 minutes) - Parent-child free play observation (Playroom)
- D (10 minutes) - Unsupervised academic task observation (Playroom)
Parent completes questionnaire measures (Tx Room)
- E (30 minutes) - Baseline/Follow-up: Parent continues to complete questionnaires (Tx Room), Child free play (Playroom)
Mid/Post: Baseline videotape observation with parent (Tx Room), Child free play (Playroom)
Practice session with parent and child (Playroom)

therapist reviewed previously assigned homework and new treatment material. All treatment sessions finished with the modeling and participant role play of novel treatment components with both parent and child. It is important to note that all observation sessions took place prior to the introduction of novel treatment components. Consequently, behavioral data observation change may be attributed to prior treatment components (e.g., treatment changes noted in session 6 are attributed to sessions 1-5, not to concepts introduced in session 6).

Following the focus of treatment on child noncompliance (mid-treatment), free play and unsupervised academic task probes were conducted. These generalization probes were also conducted at the end of treatment. Their integration into the treatment sequence can be seen in Figure 1b. Parents completed the DBDRS, PSI-SF, and HSQ at mid and post-treatment. The BASC, behavioral knowledge test, PAS and Parent Satisfaction Questionnaire were additionally completed by the parent at the end of treatment. Questionnaire administration procedures are outlined in Table 5.

All treatment sessions were conducted biweekly by either the primary researcher or a second year graduate student in child clinical psychology. Families maintained consistent Monday/Wednesday (Mike and Brant) or Tuesday/Thursday (Jacob and Troy) evening appointment times throughout treatment. Each experimental session was attended by the primary therapist and a supervised undergraduate student.

Follow-Up. Two follow-up sessions were conducted to evaluate the maintenance of treatment effects following treatment completion. One follow-up session was conducted 1-month and a second 3-months post-

Table 5. Questionnaire Administration Procedure

Session	Questionnaires Completed
Baseline	BASC DBDRS HSQ PSI-SF PAS Behavioral Knowledge Test
Mid-Treatment	DBDRS HSQ PSI-SF
Post-Treatment	BASC DBDRS HSQ PSI-SF PAS Behavioral Knowledge Test Parent Satisfaction Questionnaire
1-Month Follow-Up	DBDRS HSQ
3-Month Follow-Up	BASC DBDRS HSQ PSI-SF PAS

treatment. All follow-up sessions included the four behavioral observations. At the first follow-up session, parents completed the DBDRS and HSQ. The 1-month follow-up session also consisted of a booster session with therapist feedback about the parent's performance during behavioral observations. At the 3-month follow-up session, parents completed the BASC, DBDRS, HSQ, PSI-SF, and PAS. Also at the 3-month follow-up, all participating parents received graphs of their own behavioral data accompanied by a detailed therapist explanation.

Treatment Integrity and Implementation Evaluation

Several clinical researchers have noted the value of monitoring the treatment provision process in addition to treatment outcomes (e.g., Peterson & Bell-Dolan, 1995; Waltz, Addis, Koerner, & Jacobson, 1993). Kazdin (1991) summarized the importance of implementation evaluation to clinical research by stating: "if treatment is not conducted in the intended manner, outcome effects are extremely difficult to evaluate...it is important to rule out the possibility that [treatment] differences are due to variations of integrity with which each was conducted" (p. 793). In the present study, implementation of the treatment program was evaluated in a variety of ways. First, therapists were trained and monitored throughout treatment. Prior to beginning the study's treatment protocol, the 2 therapists worked together with 2 pilot subjects, standardizing their implementation of the program. To monitor direct treatment implementation, supervision meetings were conducted biweekly including both therapists and a licensed psychologist. In addition, approximately 40% of all sessions were

directly observed by a second therapist to maintain consistency with treatment components.

In order to receive an adequate "dose" of psychotherapy, clients/subjects must attend treatment sessions, understand discussed concepts, and implement treatment processes in their home environment. Participants in this study were required to attend all treatment sessions and attempt to complete all homework. If a homework assignment was not completed, the therapist did not proceed to the next session for 1-2 sessions. This was meant to offer the family an opportunity to complete the assignment. Parent self-monitoring techniques were further incorporated in the Pisterman treatment manual (1992a, 1992b). For instance, parents were asked to keep records of positive attending during nondirective "special times" with their child, as well as the frequency of rewards and time-outs during assigned compliance situations. This manual further requested that parents periodically tally the occurrence of one parent-designated child "problem behavior" to later target with the time-out procedure. Selected problem behaviors were shown in Table 2. Self-monitoring procedures allowed the therapist opportunities to monitor parents' understanding of the treatment principles and their effectiveness on parent-cited target behaviors.

Finally, in order to assess parents' understanding of social learning principles as they relate to child behavior management, the present study included an abbreviated version of the Knowledge of Behavioral Principles as Applied to Children scale (KBPAC; O'Dell, Tarler-Benlolo, & Flynn, 1979). This measure has been similarly used by other treatment outcome researchers (e.g., Horn et al., 1990, 1993).

Given the length of this measure (50 items, requiring 30-60 minutes for completion), an abbreviated form (13 items) of the KBPAC was administered before and after treatment implementation (see "Knowledge of Behavioral Principles" Appendix F). Items were selected from the KBPAC which appeared to best represent current treatment program principles.

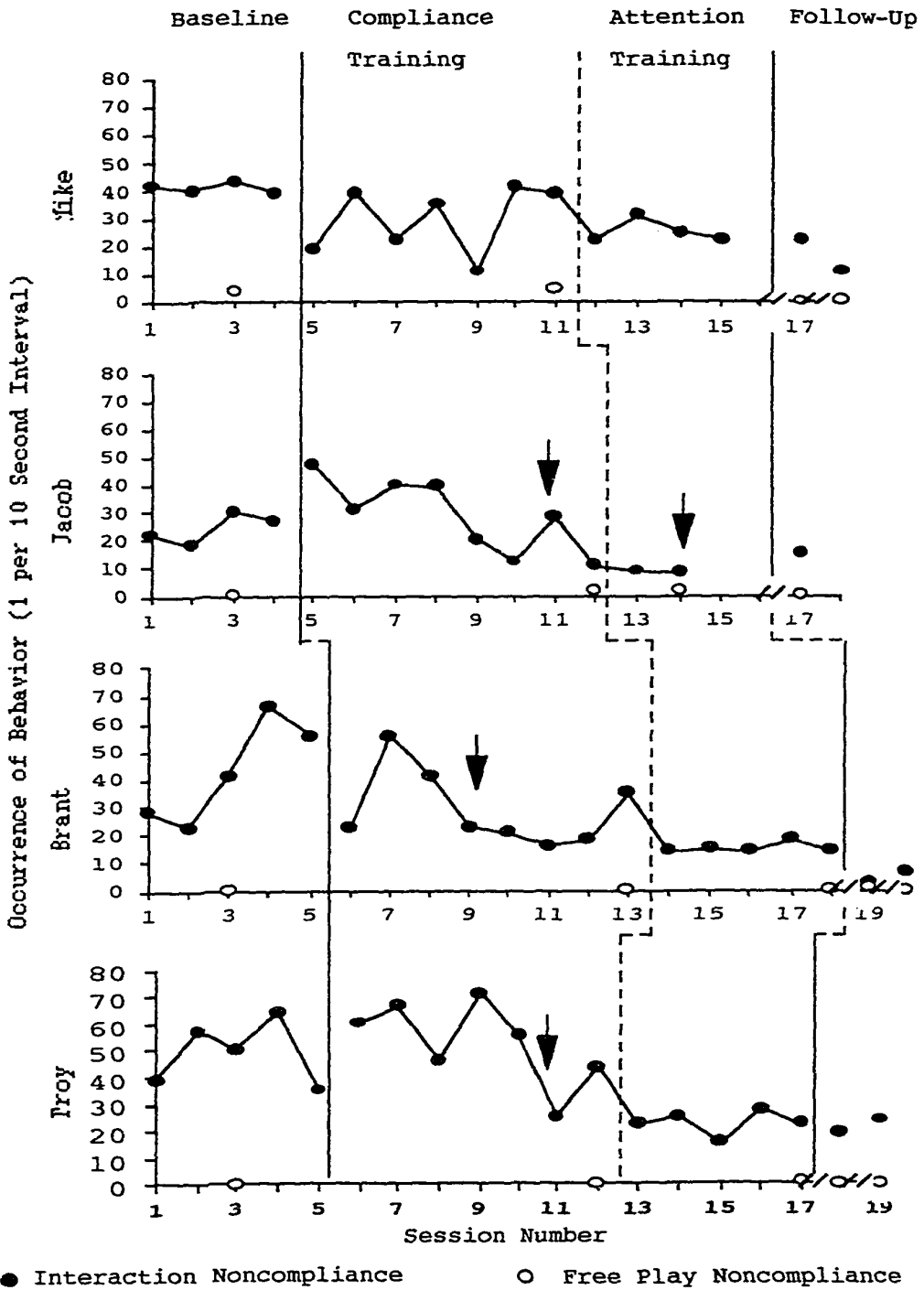
III. RESULTS

Baseline

Occurrences of noncompliance for the 4 child subjects are presented in Figure 2. The children displayed relatively high levels of noncompliance during baseline, with a mean number of noncompliant incidents of 39.6 (or 55% of all recorded intervals) across subjects (range, 25% to 92% of coded intervals). Based upon previously described stability conditions (Tawney & Gast, 1984), 3 subjects demonstrated stable baseline rates of noncompliant behavior (Mike, Jacob, and Troy), while Brant demonstrated an increasing trend in noncompliance.

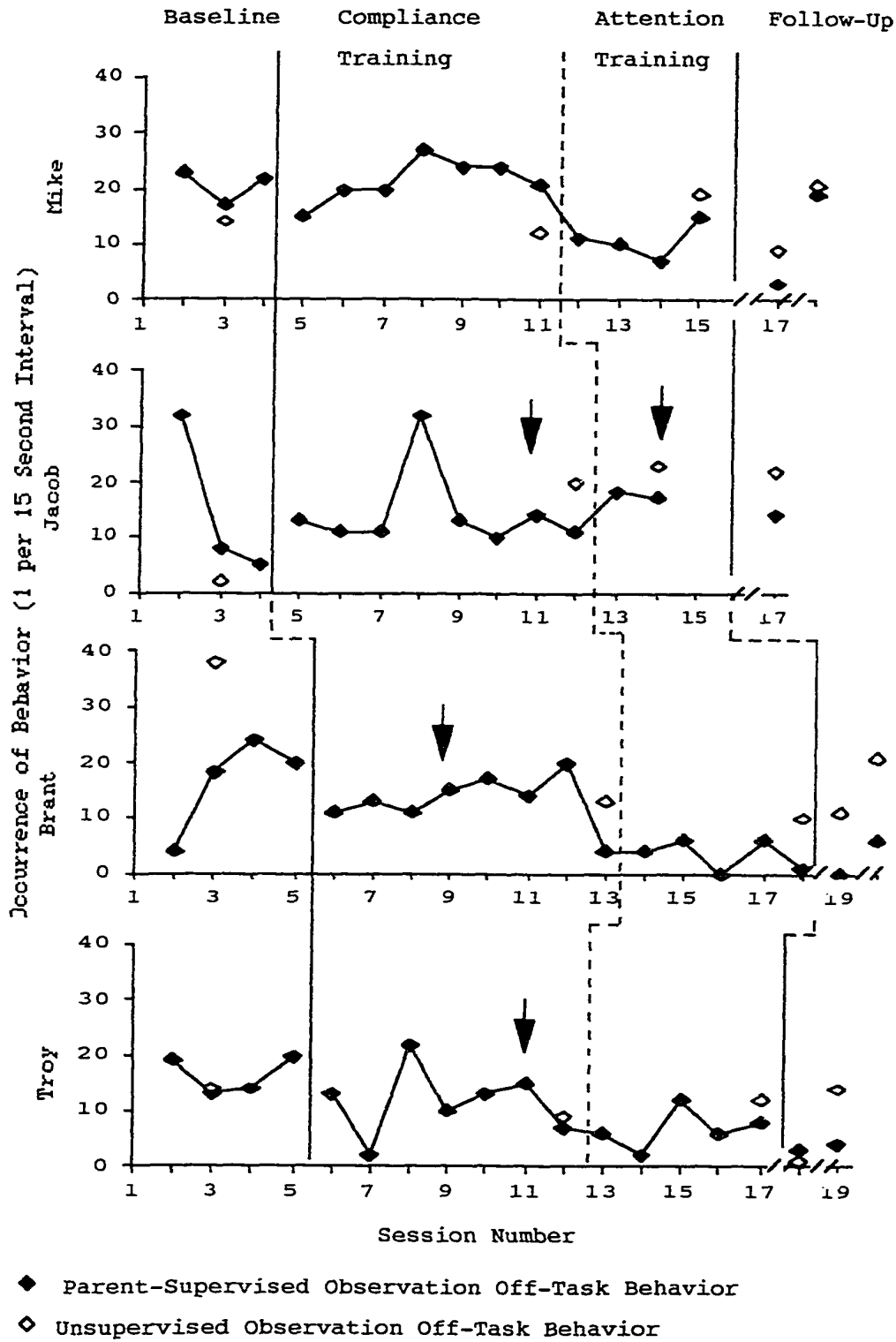
Figure 3 displays occurrences of off-task behavior for the 4 children. Baseline observations demonstrated variable rates of off-task behavior across subjects. Mike, Brant, and Troy displayed relatively high rates of stable off-task behavior across baseline observations (mean occurrence = 17.4 intervals, or 42% of coded intervals). However, Jacob displayed a decrease in off-task behavior from an original 32 incidents to 5 incidents during baseline. It is important to note that Jacob refused to complete any math problems during the first academic observation. Consequently, almost all intervals (80%) were coded as "off-task." During the next 2 observation sessions, Jacob made valid attempts to complete problems. These subsequent observations were considered more representative of his true off-task behavior.

Figure 2. Child Noncompliance During Parent-Child Interaction and Free Play Observations



● Interaction Noncompliance ○ Free Play Noncompliance
 Note: Arrows marked in Figures 2-13 represent previous session repetition due to homework noncompletion.

Figure 3. Child Off-Task Behavior During Parent-Supervised and Unsupervised Academic Observations



Treatment

Noncompliance. Figure 2 shows the incidents of noncompliance across sessions for all four child subjects. The 4 children show very similar treatment response behavior patterns. Following stable or increasingly noncompliant baseline observations, treatment produced initial variability in the observed incidents of noncompliance. For instance, the observed range in Mike's baseline noncompliance was from 39 to 43; however, during the initial phase of treatment the number of incidents ranged from 11 to 41. For Jacob, Brant, and Troy this initial treatment behavior variability was followed by a gradual downward trend in observed noncompliance. After the final treatment sessions emphasizing noncompliance, the children's noncompliant behavior stabilized at a much lower rate than observed at baseline. Lower incidents of noncompliance remained throughout the second treatment phase's emphasis on child off-task behavior. Mean comparisons between baseline observations and the last 5 treatment sessions demonstrate decreases in noncompliant behavior which range from 40% (Mike) to 64% (Brant). At 1 and 3-month follow-up observations incidents of noncompliance remained consistent with posttreatment observations for Mike, Brant, and Troy. Jacob's noncompliant behavior observed at 1-month follow-up was also consistent with posttreatment; however, Jacob's family declined the opportunity to schedule a 3-month follow-up appointment.

In looking at trends in observed rates of noncompliance in relation to treatment components, it appears as if treatment sessions 9 and 10 may have been influential. A downward trend can be noted across

3 subjects following these two sessions (Jacob, Brant, Troy). Sessions 9 and 10 included explanations of time-out from reinforcement as well as the first clinic practice session. For Brant and Troy, these sessions were also repeated due to their mother's failure to adequately complete homework. The current study design does not allow for conclusions regarding which of these treatment components was most influential in behavior change.

All four children displayed little to no noncompliance during free play observations at baseline, mid-treatment, post-treatment, and follow-up. Low rates of noncompliance were expected during free play observations given that few demands were placed upon the child.

Off-Task Behavior. Incidents of off-task behavior for all child subjects across sessions can be found in Figure 3. A comparison of baseline off-task behavior to occurrences during the first phase of treatment show little change and relatively stable responses (demonstrated by Mike, Jacob, and Brant). When treatment focus switched to academic situations, Mike and Brant demonstrated decreases in off-task behavior. Following baseline (average off-task incidents = 19), Mike's off-task behavior remained stable (mean = 21.6) and decreased to an average of 10.75 during the attention phase of treatment (a 43% decrease from baseline). Brant's observed off-task behavior decreased from an average of 16.8 occurrences at baseline to an average of 3.4 occurrences in the final phase of treatment (an 80% decrease from baseline). Each of these subjects maintained occurrences of off-task behavior at the 1-month follow-up consistent (Brant) or less (Mike) than

those observed at posttreatment. At the 3-month follow-up observation, Mike's off-task behavior had increased to a level consistent with baseline observations. Brant, on the other hand, maintained a rate of off-task behavior consistent with posttreatment at 3-month follow-up.

Troy's occurrences of off-task behavior were variable; however, no data points during the final phase of treatment (range, 2-12 incidents) exceeded those observed at baseline (range, 14-20 incidents). Contrary to Mike and Brant, several occurrences (3 data points) of Troy's off-task behavior during the compliance phase of treatment are not distinguishable from those displayed during the final phase. Nevertheless, observations of off-task behavior at the 1- and 3-month follow-up sessions were consistent with the decreased rates observed at posttreatment and showed a 30% decrease from baseline to follow-up. No observed change in off-task behavior was demonstrated across treatment sessions for Jacob.

Examination of unsupervised observations demonstrate sporadic incidents of off-task behavior, which in 3 children (Brant, Jacob, Troy) typically show higher occurrences of off-task behavior. Posttreatment and 1-month follow-up unsupervised off-task behavior are lower than baseline observations for 2 children (Brant and Troy); however, the decreases in off-task behavior while alone are small and not reliably demonstrated across all subjects. Jacob showed no changes in off-task behavior alone, while Mike and Troy showed only a decrease at 1-month, and not 3-months posttreatment. Given the inconsistent results, attention training does not appear to have consistently generalized to unsupervised academic situations.

Time-On-Task. Figure 4 displays average time-on-task for all children across sessions. Similar to occurrences of off-task behavior, the children all demonstrated no change in average time-on-task from baseline to the noncompliance phase of treatment. When treatment changed to an academic focus, Mike showed a slight increase in average time-on-task, while Brant showed a sporadic increase which was maintained at 1 and 3 month follow-up observations. For example, Mike increased his time-on-task from an average of 9 seconds at baseline to an average of 17 seconds during the academic task phase of treatment. Troy's average time-on-task was variable throughout the compliance focus of treatment, but stabilized during the attention focus. Troy's average time-on-task remained higher than baseline at 1-and 3-months posttreatment. Jacob demonstrated no increase in his average amount of time-on-task during academic training or follow-up.

Problem Completion and Accuracy. The number of completed (seen in Figure 5) and percent of correctly completed math problems (seen in Figure 6) was recorded for each academic task situation. Only 1 subject showed improvement in the total number of completed math problems during the last phase of treatment (Mike). Despite some change in the amount of their observed off-task behavior, Brant and Troy continued to correctly complete approximately the same number of math problems. Furthermore, Figure 6 demonstrates some evidence that the children's math problem accuracy decreased during the final phase of treatment. Mike and Troy showed a downward trend in the percentage of problems correctly completed beginning at the onset of the treatment's emphasis on academic situations (see Figure 6).

Figure 4. Average Time-on-Task During Parent-Supervised and Unsupervised Academic Observations

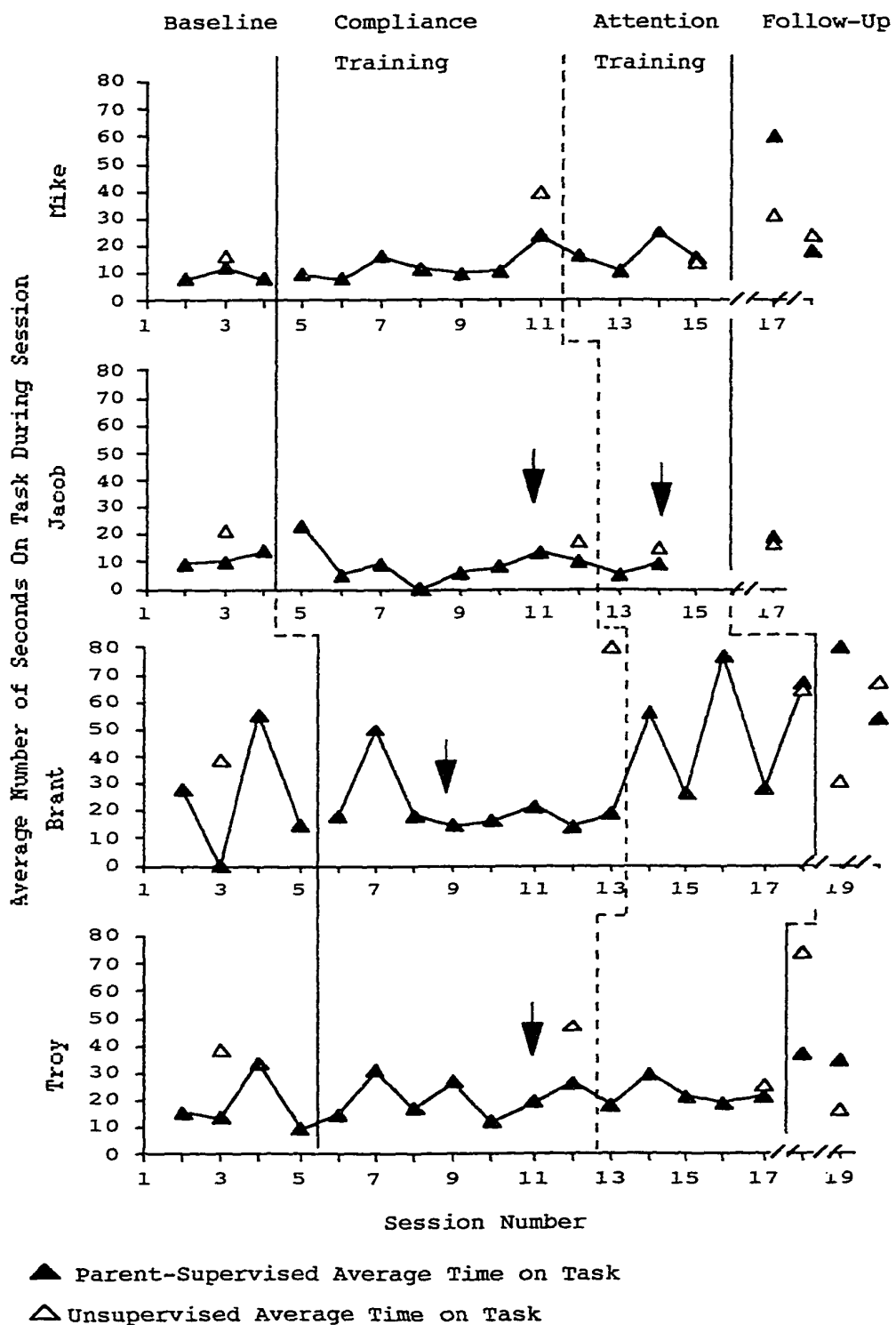
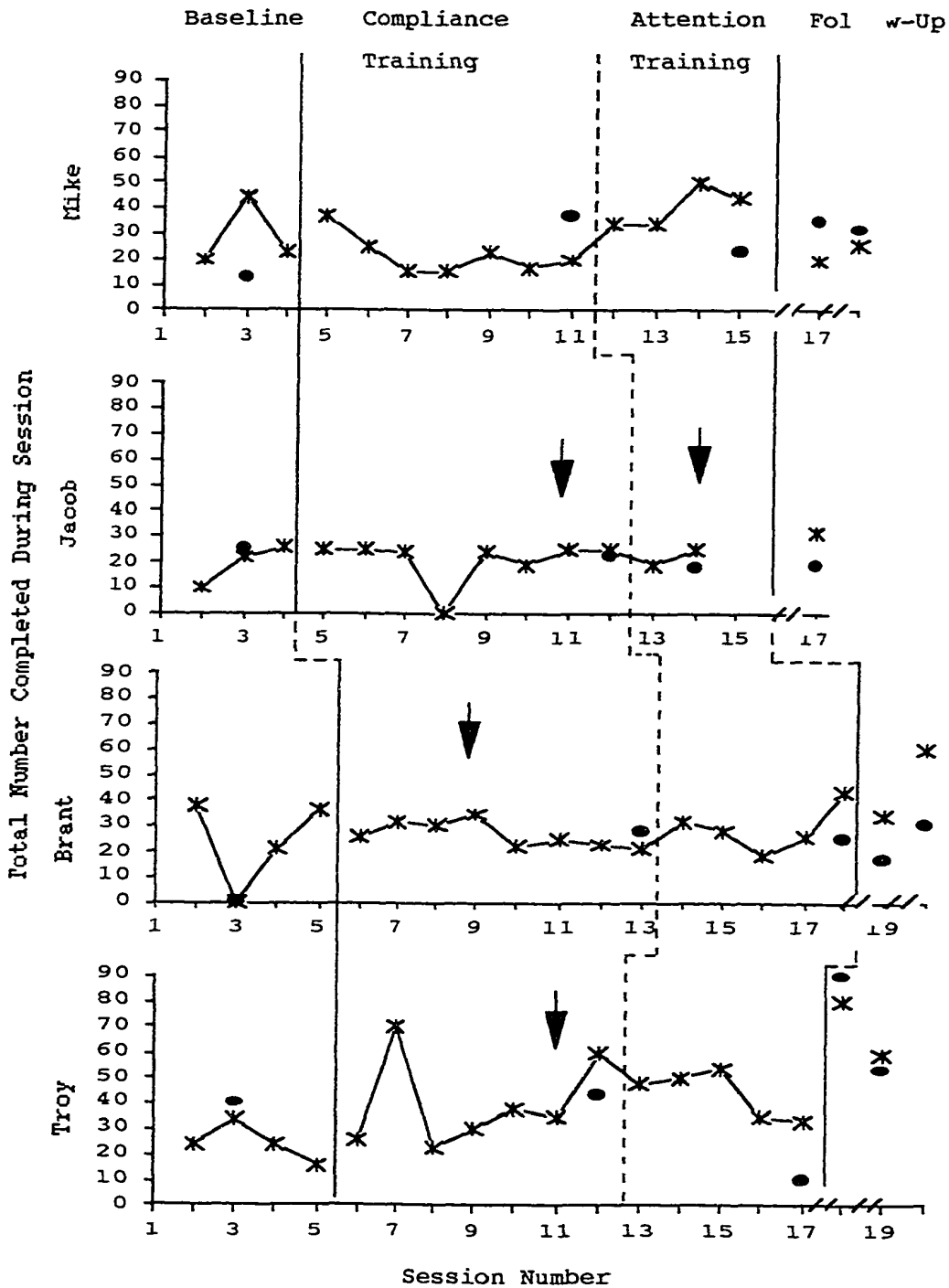
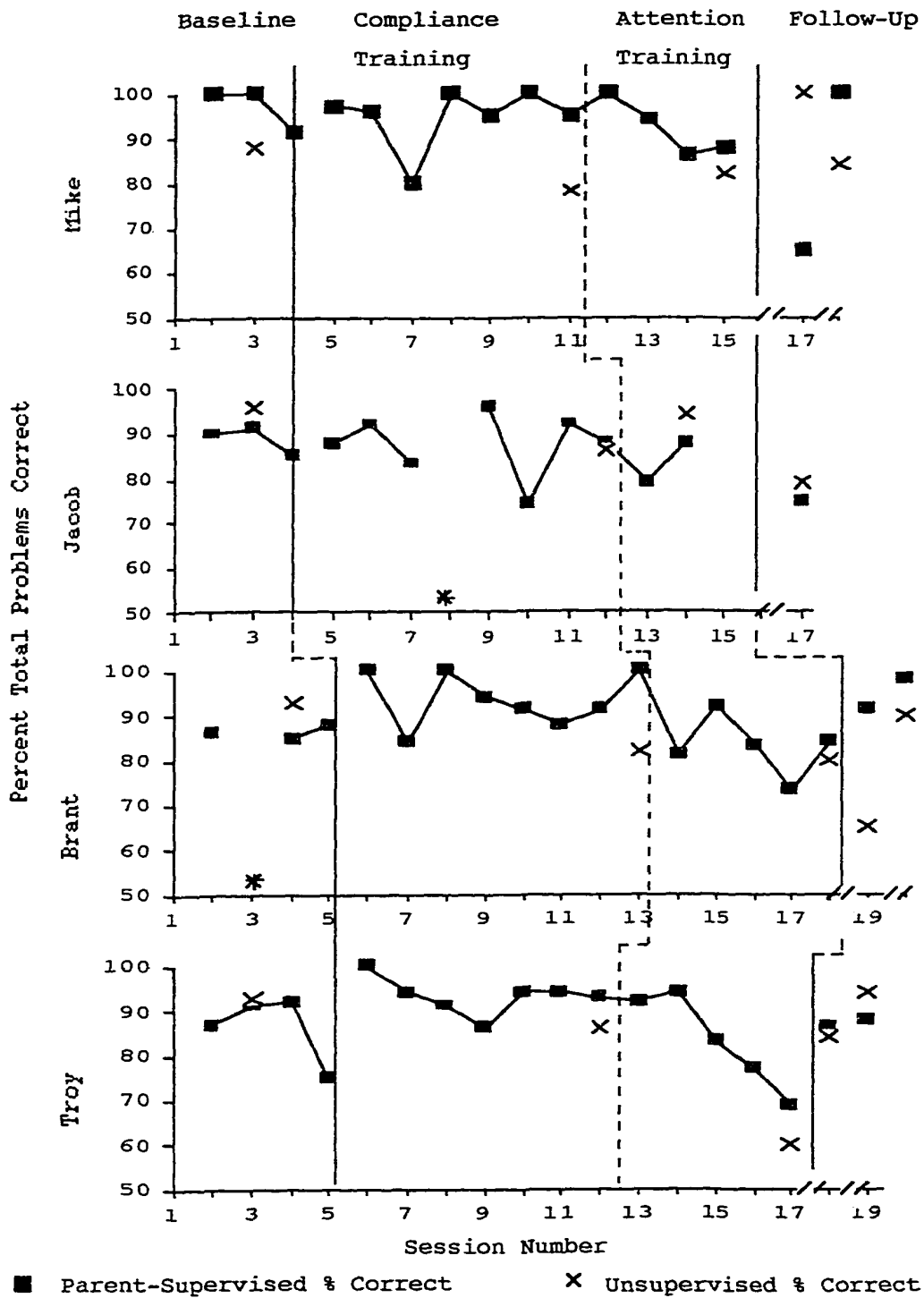


Figure 5. Number of Math Problems Completed During Parent-Supervised and Unsupervised Academic Observations



* Parent-Supervised Observation Number Completed
 ● Unsupervised Observation Number Completed

Figure 6. Percent of Correctly Completed Problems During Parent-Supervised and Unsupervised Academic Observations



Note: * symbol indicates subjects refused to completed any problems during that session.

Non-Target Child Behaviors during Parent Interaction. Incidents of initial child compliance were coded to demonstrate a child's ability to immediately follow a novel parent command which required him to quickly refocus his attention on a different activity (see Figure 7). The parent-child task observation allowed 6 occasions for initial child compliance. Baseline observations demonstrated few incidents of initial child compliance (mode observation = 0). Treatment observations displayed few changes in rates of initial child compliance. Beginning treatment sessions appeared to demonstrate some increased variability in initial compliance (particularly in Jacob and Brant); however, no consistent treatment-related change in initial child compliance was observed across subjects.

Child negative behaviors during parent-child interaction and free play observations are shown in Figure 8. Observed rates of child negativity appeared to parallel rates of child noncompliance, but tended to occur less frequently (see Figures 2 and 8). Child negative behavior was either stable (Jacob, Troy) or increasing (Mike, Brant) during baseline observations. During the initial phase of treatment, rates of child negative behaviors increased for two subjects (Jacob and Troy) and became variable for the remaining two (Mike and Brant). Troy and Jacob further showed abrupt increases in their negative behavior at sessions 8 and 9 (effective commands/time-out); however, decreasing trends are demonstrated for Troy, Mike, and Jacob at the end of treatment Phase 1. By the second phase of treatment, negative behavior stabilized at a low rate for all 4 subjects (under 10 incidents for all subjects during the last 6 treatment sessions).

Figure 7. Initial Child Compliance During Parent-Child Interaction Observations

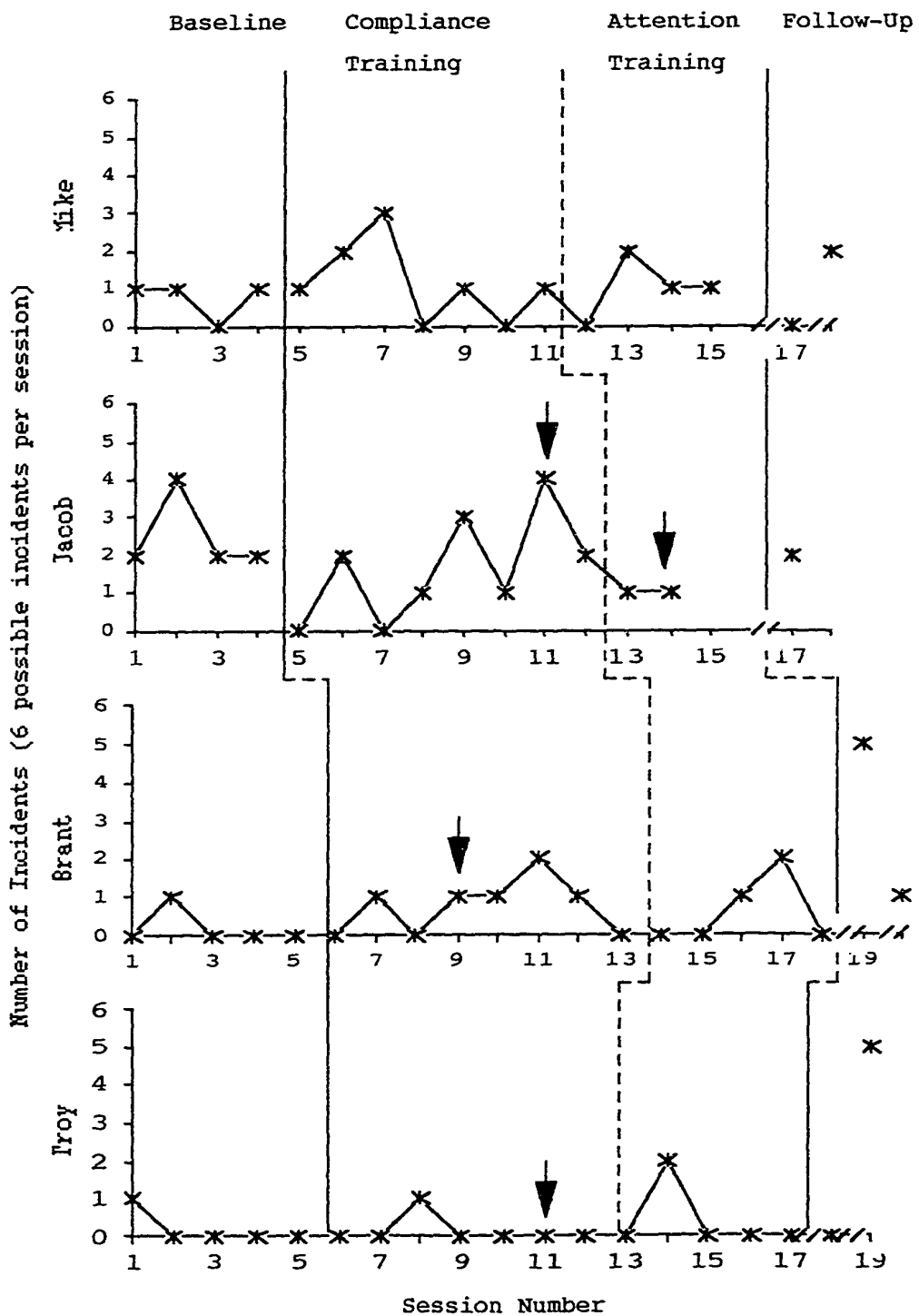
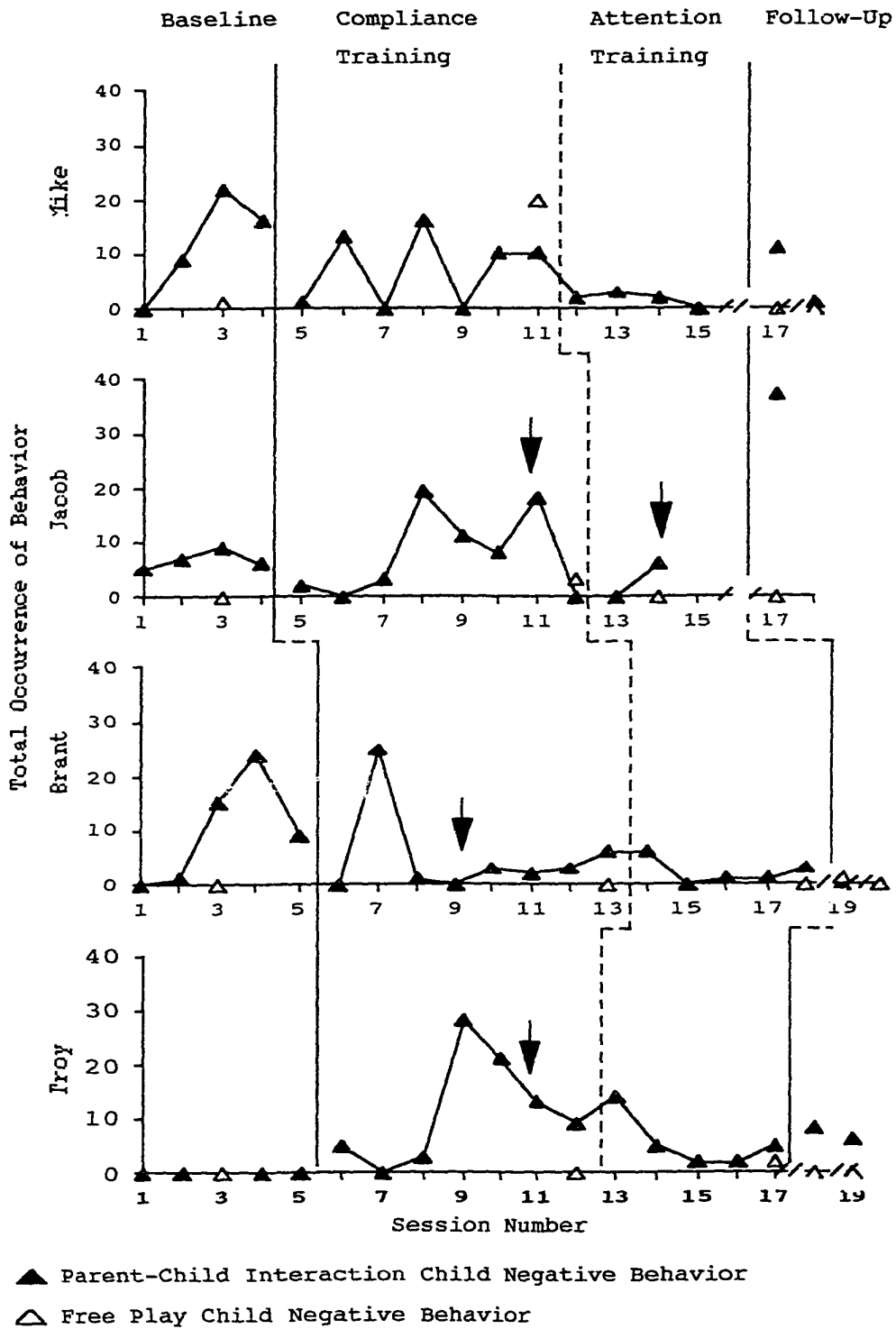


Figure 8. Child Negative Behavior During Parent-Child Interaction and Free Play Observations



Non-Target Child Behavior During Academic Observation. Figures 9 and 10 show rates of child fidgeting and off-task vocalizations during baseline, treatment, and follow-up academic task observations. Fidgeting was common for all subjects throughout treatment (range of average occurrences, 45% to 68% of all coded intervals across subjects) and demonstrated consistent variability across baseline, treatment, and follow-up observations. Although less frequent than fidgeting (range of average occurrences, 10% to 25% of all coded intervals across subjects), off-task vocalizations also demonstrated no treatment related changes.

Treatment Integrity. The treatment program instructed parents to increase positive reinforcement and provide their children with more effective commands. Consequently, to evaluate treatment integrity, praise and number of commands issued are shown in Figures 11 through 13. During baseline, the mothers provided praise to their children an average of 3 times (range, 0 to 14), issued an average of 25 commands (range, 10 to 50), and repeated the original prompted commands an average of 9 times (range, 2 to 27).

Although variable, all 4 mothers appeared to have increased the number of times they praised their child during the first phase of treatment and maintained increased praise through the second phase of treatment and at follow-up. For Mike, maternal praise increased from a baseline mean of 8.25 to 13.85 in Phase 1 and 12.0 in Phase 2. Similarly, an increase was observed in maternal praise for Jacob from 0 occurrences at baseline to an average of 3.63 in Phase 1, which was maintained in observations taken during Phase 2. Treatment related increases in praise appear to have further generalized to free play

Figure 9. Child Fidgeting During Parent-Supervised and Unsupervised Academic Observations

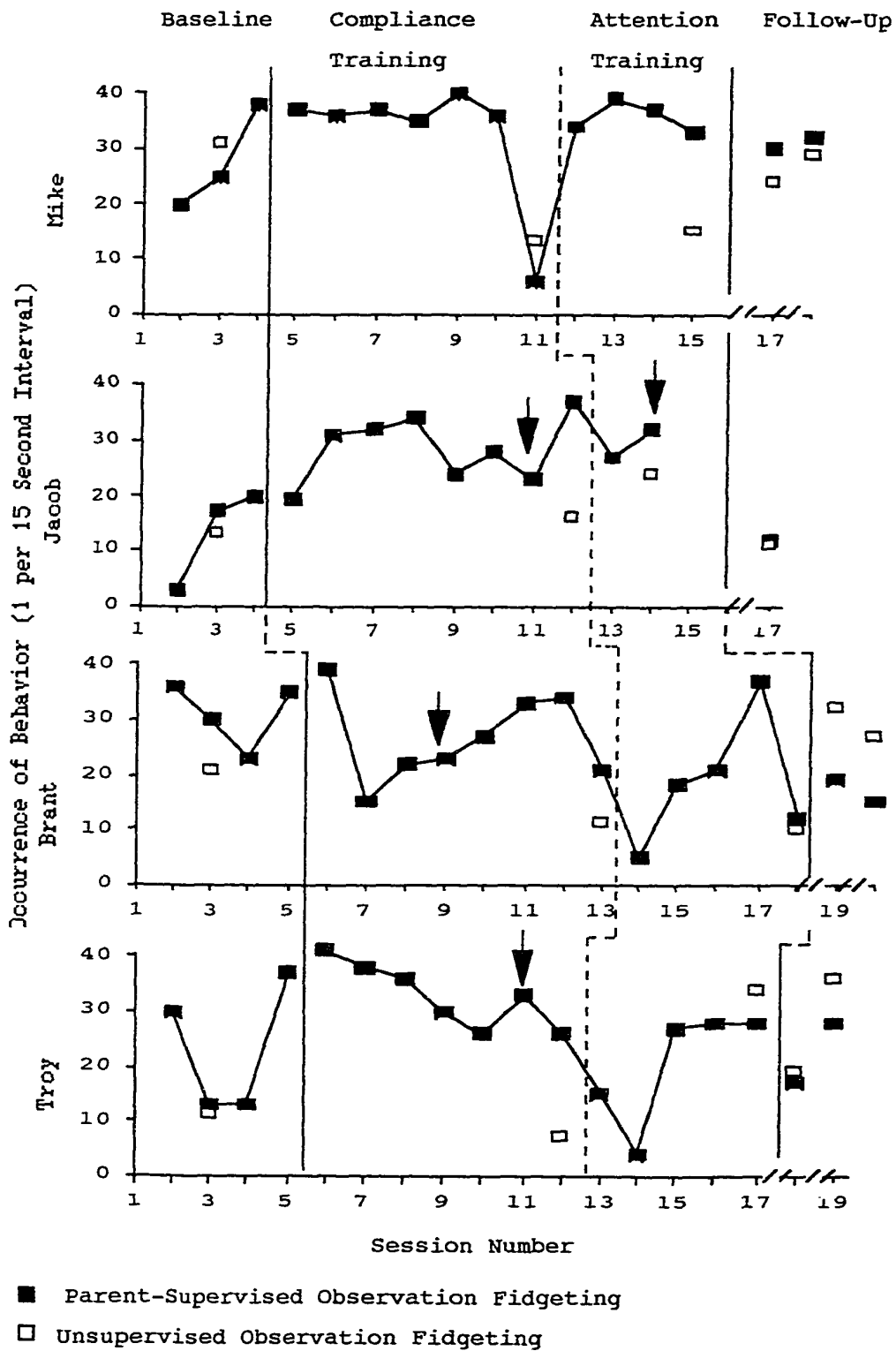
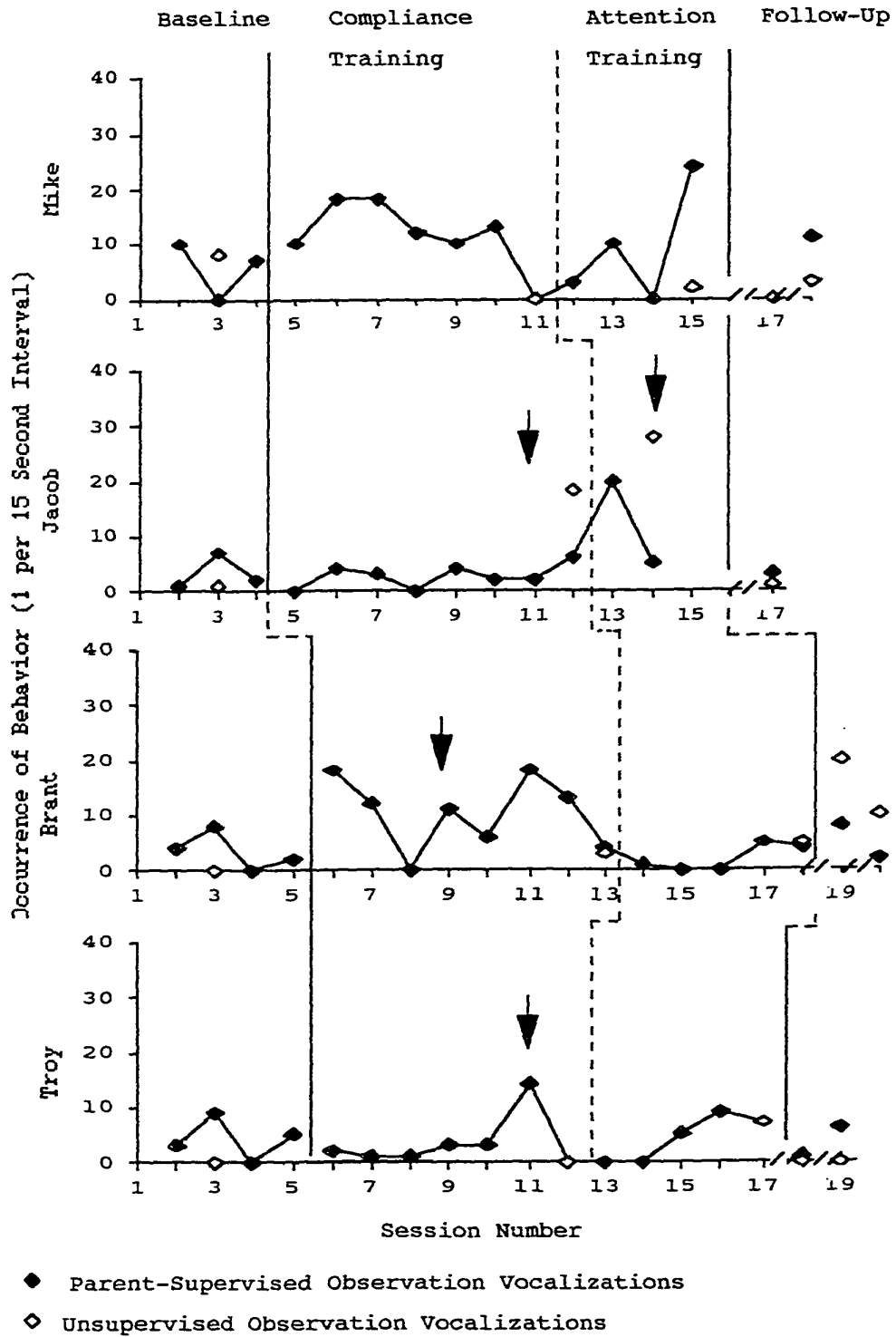


Figure 10. Child Off-Task Vocalizations During Parent-Supervised and Unsupervised Academic Observations



observations. Three subjects' mothers demonstrated no praise during the baseline free play observation (Jacob, Brant, Troy). At mid, posttreatment, and 1-month follow-up three subjects demonstrated higher occurrences of praise during free play (Mike, Jacob and Troy). Consequently, treatment procedures to increase maternal positive reinforcement appear to have been successful during task interactions and to have generalized into free play observations.

An examination of maternal commands across treatment demonstrates that the two parents with the highest initial command rates (Mike and Brant) demonstrated a decreasing trend in commands issued throughout treatment. The mothers of Troy and Jacob maintained a stable command rate throughout treatment. Troy and Jacob's mothers also initially demonstrated baseline rates (mean = 17.32) consistent with the treatment related decreased rates later observed in the mothers of Mike and Brant (mean = 13.41). Response definitions for general commands included those aimed at maintaining a child's focus to the original command as well as initiating compliance. Consequently, a certain number of commands were innately necessary for completion of the parent-child interaction task (likely between 13 and 17 commands). Figure 13 demonstrates mothers' decreases in repetition of the original prompted command to either initiate or maintain compliance. All four mothers decreased the frequency of repeated original commands to under 5 times in the last 6 observation sessions (range 0-5). Mothers continued to repeat fewer than 5 commands at 1 and 3-months follow-up observations. This decrease in repeated commands more clearly supports the treatment integrity associated with an increase in effective command style.

Figure 11. Parent Approval During Parent-Child Interaction and Free Play Observations

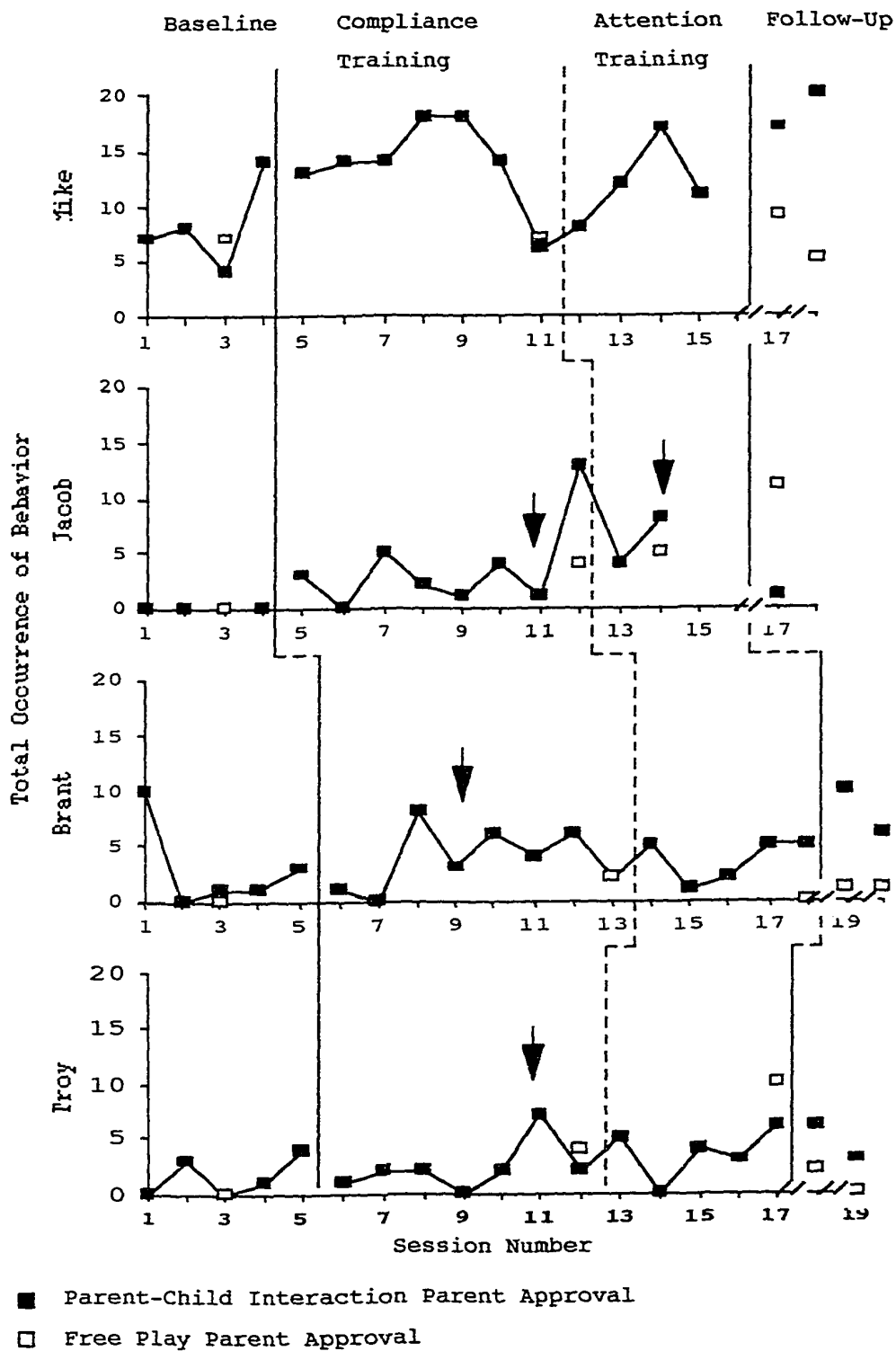


Figure 12. Parent Commands During Parent-Child Interaction and Free Play Observations

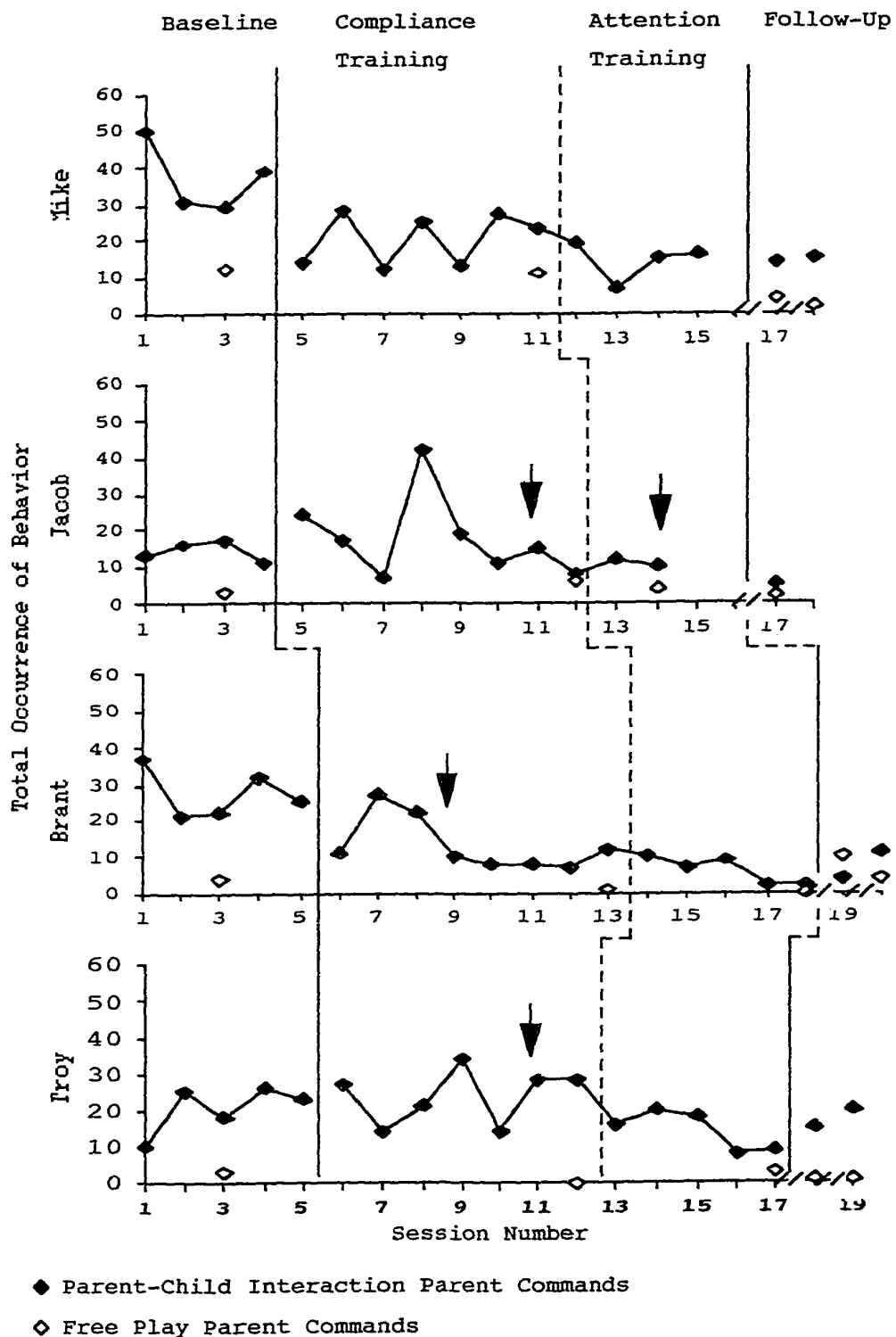
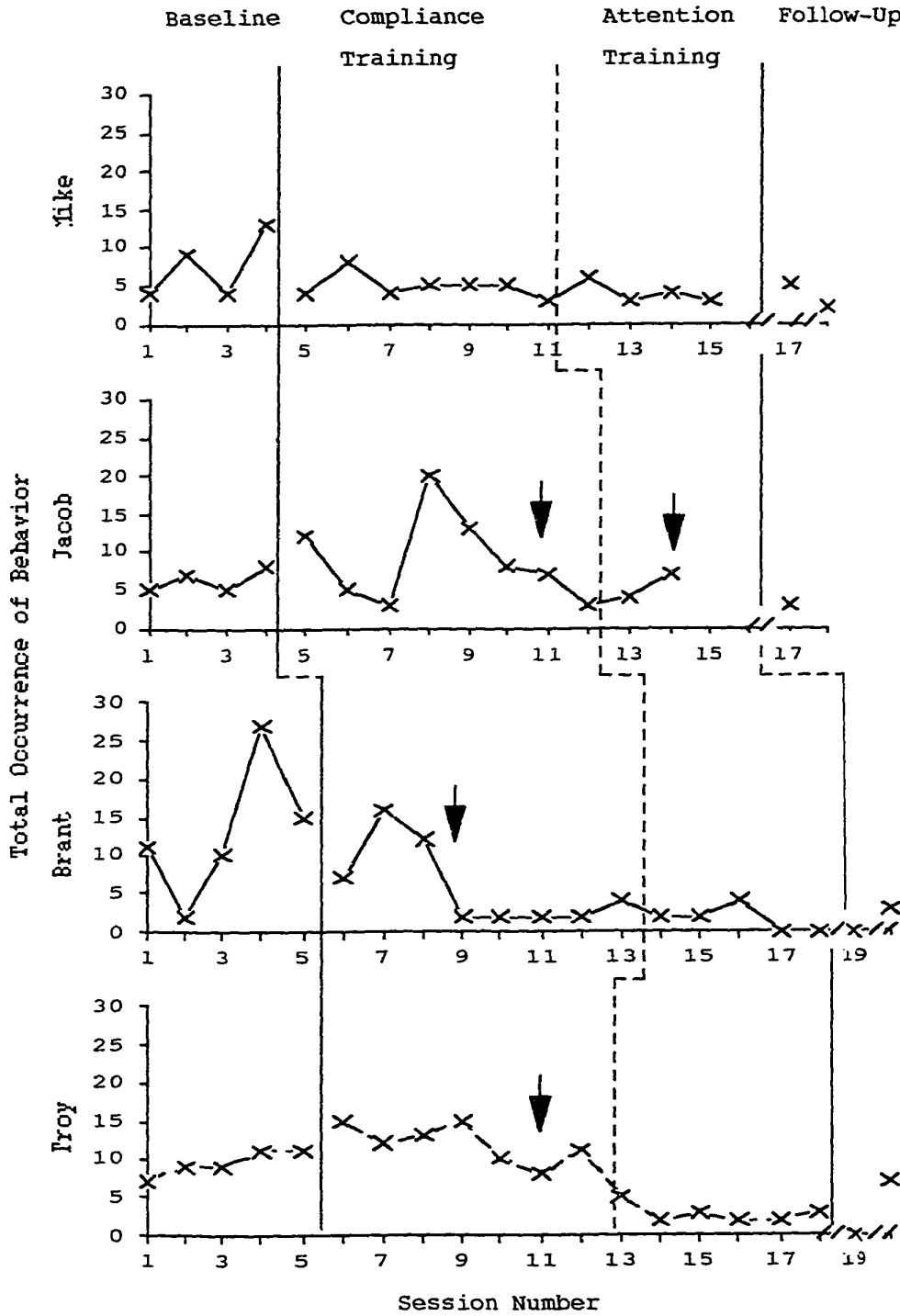


Figure 13. Parent Repeats Original Command During Parent-Child Interaction Observations

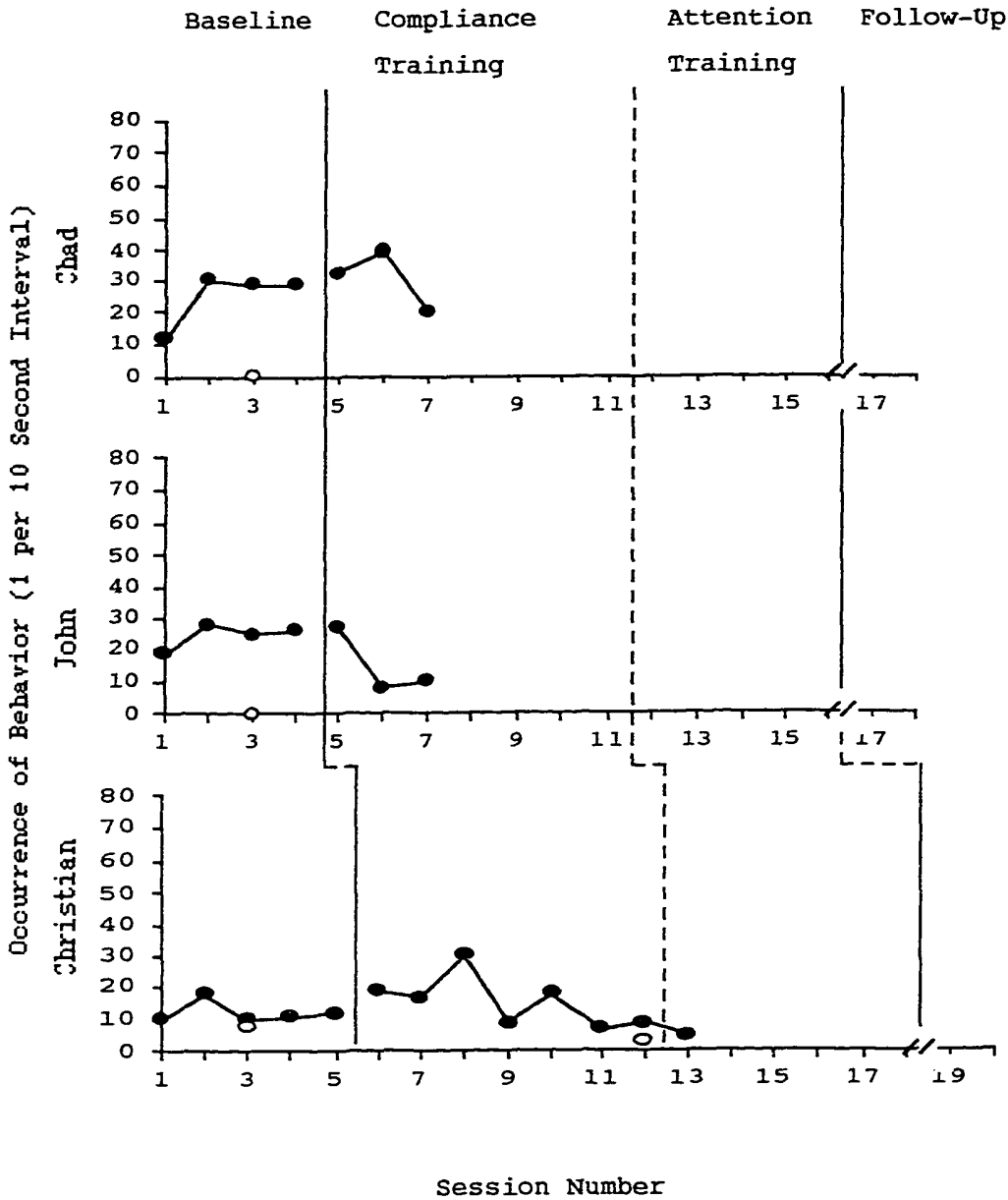


Further evidence of treatment integrity can be found in the observed relationship between mother and child behaviors. Maternal praise tended to be observed at high rates during observations where low rates of child noncompliance and negativity were coded. Similarly, fewer maternal commands were often coded in sessions with high rates of compliance. In particular, see session 12 for Jacob and session 11 for Troy across Figures 2, 8, 11, and 12. These patterns indicate response observations consistent with the treatment program (e.g., praising positive behaviors and refocusing off-task or noncompliant behaviors).

Target Behaviors in Subjects Who Dropped Out of Treatment

Figures 14 and 15 display target behavior observations for 3 subjects who prematurely terminated treatment. Despite dropping out of treatment, behavioral improvements can be noted in rates of child noncompliant behavior with the initiation of treatment (see Chad, John, and Christian). Similar to those subjects who completed treatment, Christian's noncompliant behavior became initially more variable and then stabilized between sessions 11 and 13 at a slightly lower rate than observed at baseline. Low rates of observed off-task behavior for Chad and John displayed in Figure 15 make conclusions about further behavior change difficult; however, Christian's off-task behavior appeared to show little change during the treatment's emphasis on compliance to parent commands. Consequently, behavioral responses for subjects at program drop-out appear to confirm expected behavior changes as well as preliminary treatment effectiveness.

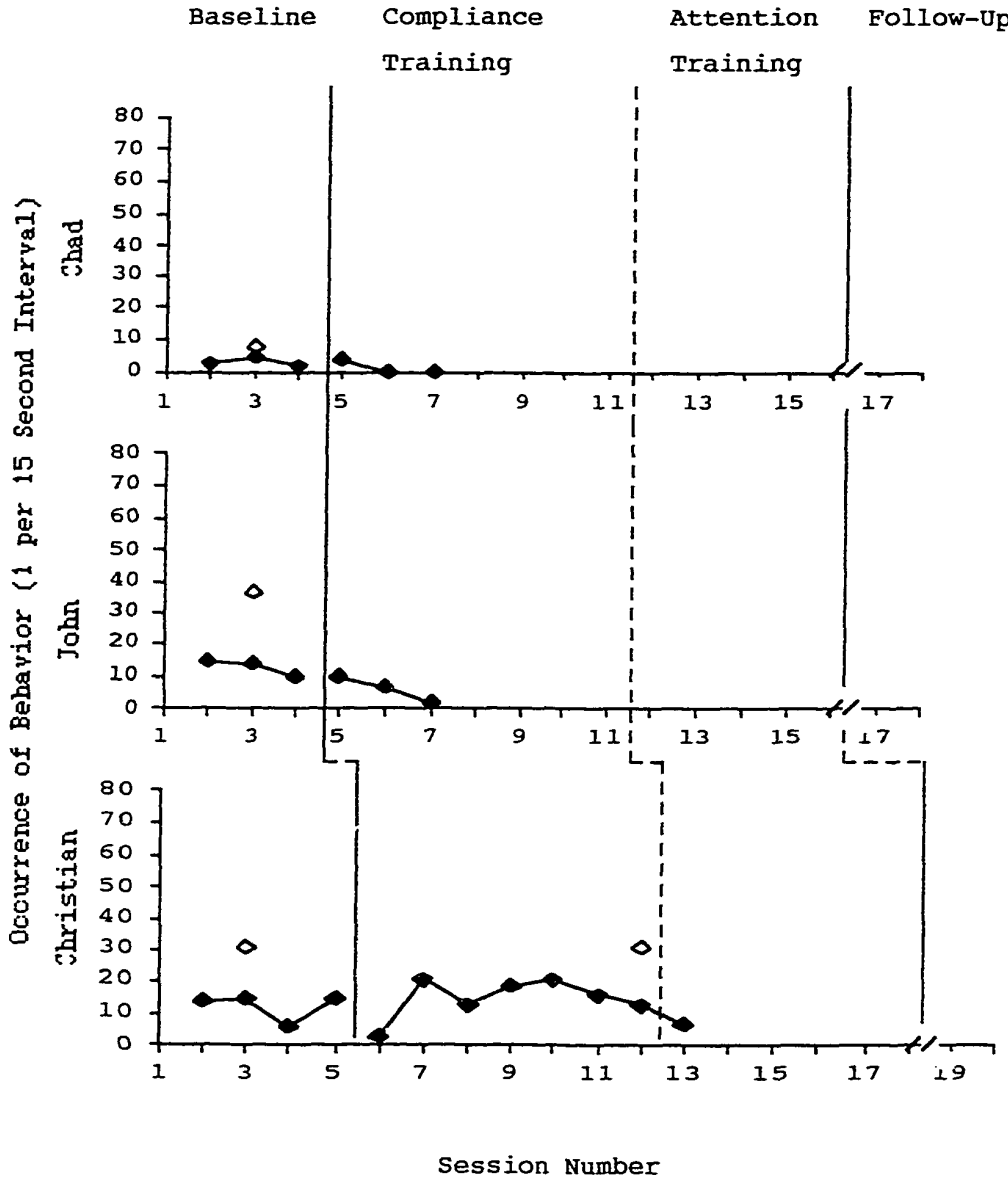
Figure 14. Child Noncompliance During Parent-Child Interaction and Free Play Observations for Subjects who Dropped Out of Treatment



● Interaction Noncompliance

○ Free Play Noncompliance

Figure 15. Child Off-Task Behavior During Parent-Supervised and Unsupervised Academic Observations for Subjects who Dropped Out of Treatment



- ◆ Parent-Supervised Observation Off-Task Behavior
- ◇ Unsupervised Observation Off-Task Behavior

Parent-Reported Child Behavior

Figures 16-20 display data from parent-completed child behavior rating scales. Examinations of data from the BASC Externalizing and Internalizing Problems scales indicate posttreatment decreases across all four subjects. Ratings for Mike, Brant, and Troy remained lower than baseline 3-months after treatment; however, no child subjects were rated by their mothers very far beneath the 90th percentile on the Externalizing Problems scale. Inconsistent decreases were noted on the Attention Problems scale of the BASC (see Figure 17a), with three subjects showing slight decreases (Mike, Jacob, Brant) and one subject showing a slight increase (Troy). When compared with baseline ratings, all subjects were rated with lower scores on the BASC Hyperactivity scale at posttreatment and 3-month follow-up (see Figure 17b). BASC Conduct Problems scale scores are displayed in Figure 18a. Only Jacob received initial conduct and aggression T-scores which exceeded the 90th percentile for a child his age. Jacob's mother reported decreases in each of these problem areas at posttreatment, especially on the Conduct Problems scale.

Greater behavior rating scale changes in parent reports of child inattention and hyperactivity were noted on the DBDRS (see Figure 19). On the Inattention scale, all four subjects received a lower parent rating at posttreatment than at baseline. This decreased rating was maintained at 1- and 3-month follow-up for Mike and Brant. Similarly, when compared to pretreatment scores, all four subjects received lower ratings on the Hyperactive-Impulsive scale of the DBDRS at

posttreatment. These scores were also maintained at 1- and 3-month follow-up sessions.

When parents were asked about the number of home child behavior problems situations on the HSQ, pre to posttreatment changes were variable across subjects (see Figure 20a). Only one subject (Mike) demonstrated a marked decrease in parent perceptions of the number of problem situations. However, when asked about the severity of these problem areas, all four parents' ratings consistently decreased throughout the course of treatment and were maintained at 1- and 3-month follow-up (see Figure 20b).

Parent-Reported Stress and Psychopathology

Parent data regarding perceived stress and psychopathology are displayed in Figures 21 and 22. Parent reports of stress decreased from pre to posttreatment for all 4 subjects. Reports of parenting stress decreased most dramatically for Jacob and Troy at midtreatment (following the treatment's emphasis on compliance training) while Brant and Mike's mothers reported decreases only after the completion of the program. In addition, despite decreases in their report of parenting stress, Jacob and Troy's mothers' reports continued to exceed clinical cutoffs according to Abidin (1995). Only the report of Mike's mother decreased from a clinically significant score to one well beneath the clinical cutoff. Mothers' stress ratings 3 months after treatment were comparable to posttreatment reports.

Two out of the four mothers reported psychopathology scores at pretreatment on the PAS (see Figure 22) which exceeded clinical cutoffs

Figure 16a. Behavior Assessment System for Children-Parent Form (BASC-PF) Externalizing Problems Scale at Pre-Treatment, Post-Treatment, and 3-Month Follow-Up.

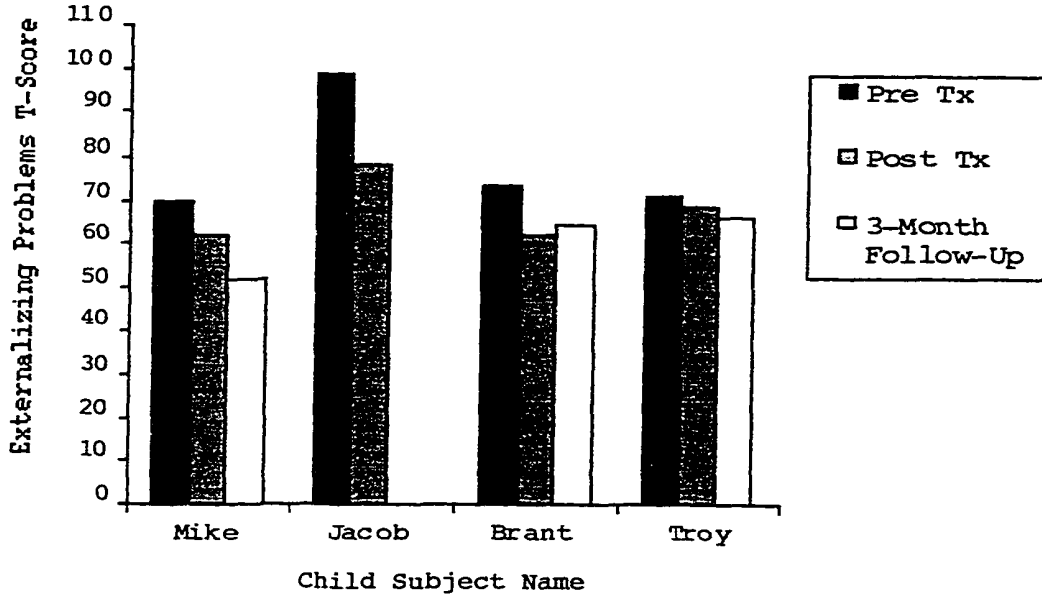
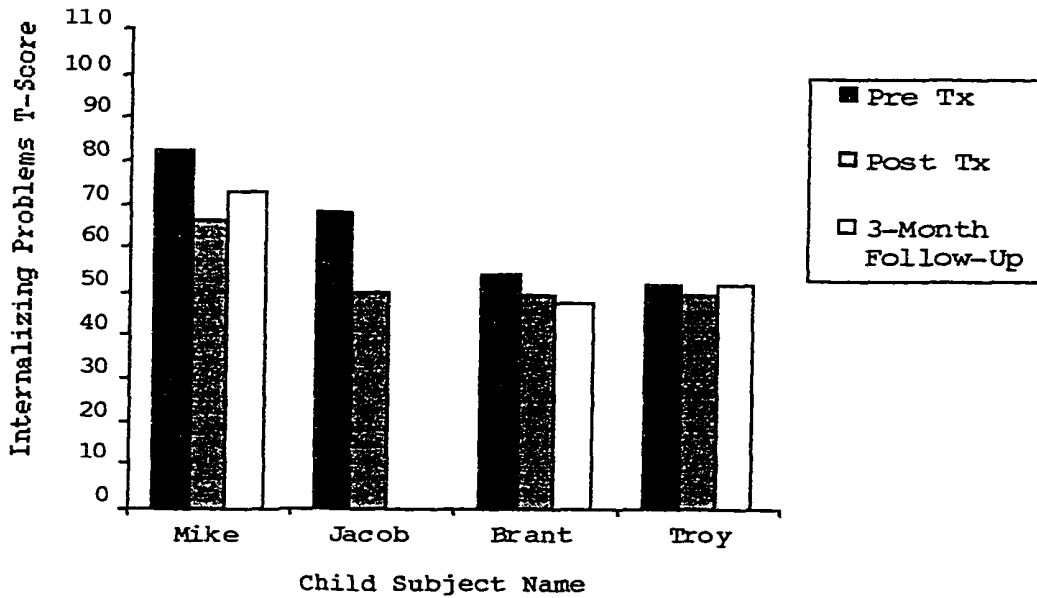


Figure 16b. BASC-PF Internalizing Problems Scale at Pre-Treatment, Post-Treatment, and 3-Month Follow-Up.



Note: BASC-PF T-scores greater than or equal to 65 exceed the 90th percentile for same aged and gender children.

Figure 17a. Behavior Assessment System for Children-Parent Form (BASC-PF) Attention Problems Scale at Pre-Treatment, Post-Treatment, and 3-Month Follow-Up.

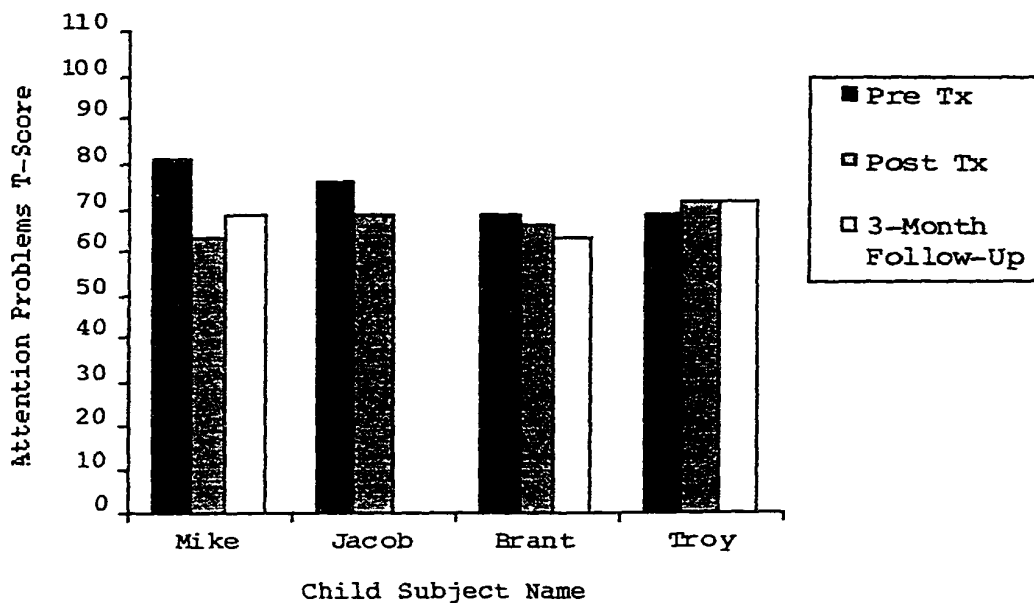
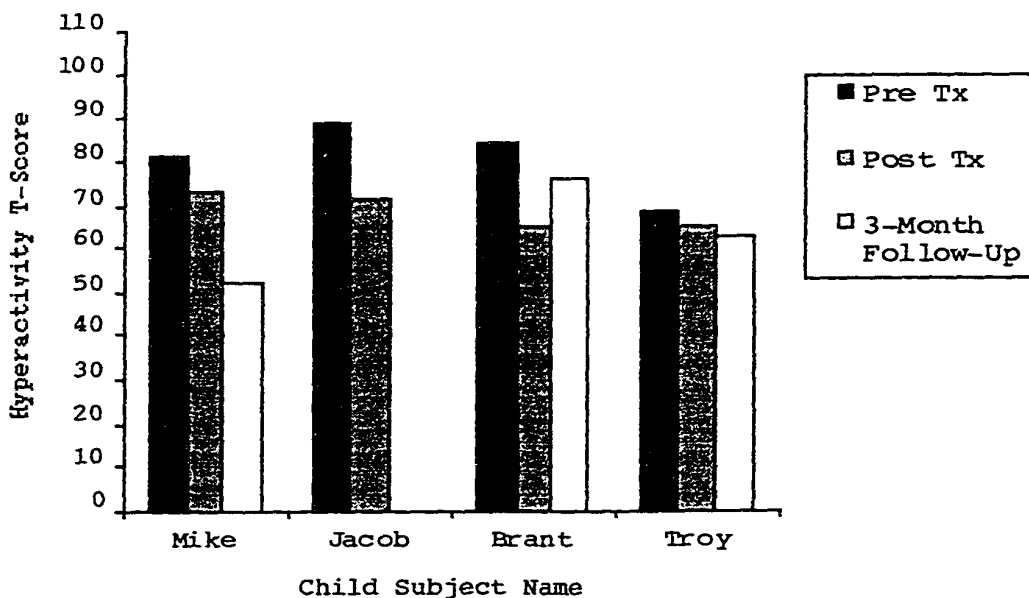


Figure 17b. BASC-PF Hyperactivity Scale at Pre-Treatment, Post-Treatment, and 3-Month Follow-Up.



Note: BASC-PF T-scores greater than or equal to 65 exceed the 90th percentile for same aged and gender children.

Figure 18a. Behavior Assessment System for Children-Parent Form (BASC-PF) Conduct Problems Scale at Pre-Treatment, Post-Treatment, and 3-Month Follow-Up.

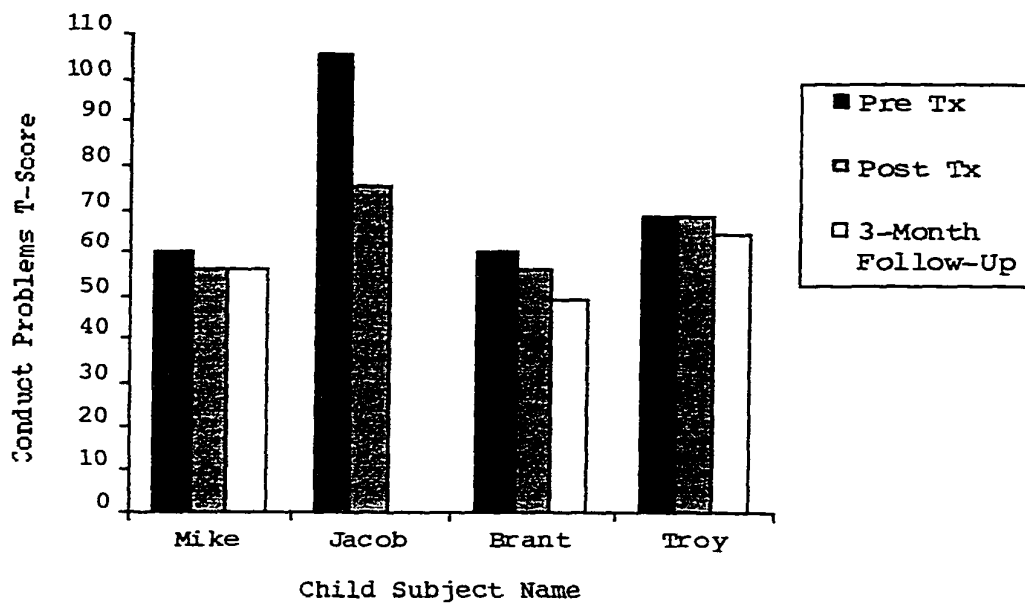
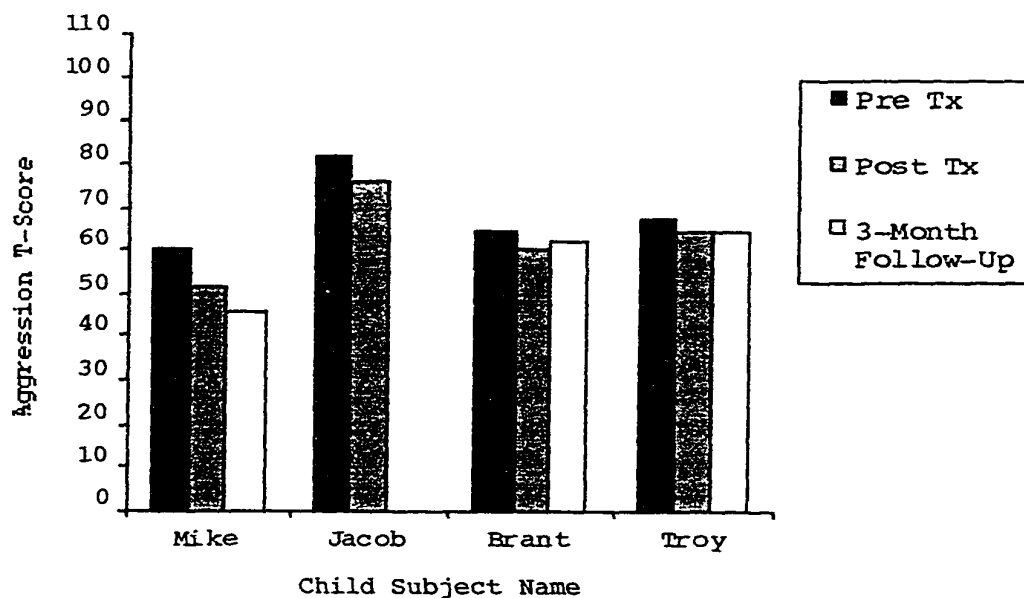


Figure 18b. BASC-PF Aggression Scale at Pre-Treatment, Post-Treatment, and 3-Month Follow-Up.



Note: BASC-PF T-scores greater than or equal to 65 exceed the 90th percentile for same aged and gender children.

Figure 19a. Disruptive Behavior Disorders Rating Scale-Parent Form (DBDRS-PF) Inattention Scale at Pre-Treatment, Mid-Treatment, Post-Treatment, 1-Month and 3-Month Follow-Up.

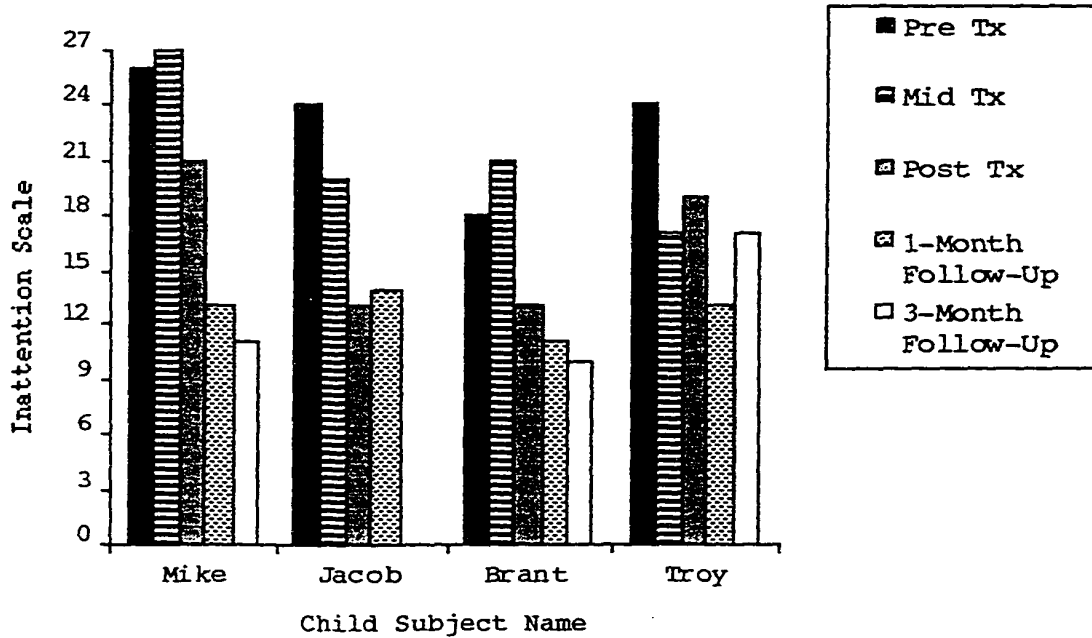


Figure 19b. DBDRS-PF Hyperactive-Impulsive Scale at Pre-Treatment, Mid-Treatment, Post-Treatment, 1-Month and 3-Month Follow-Up.

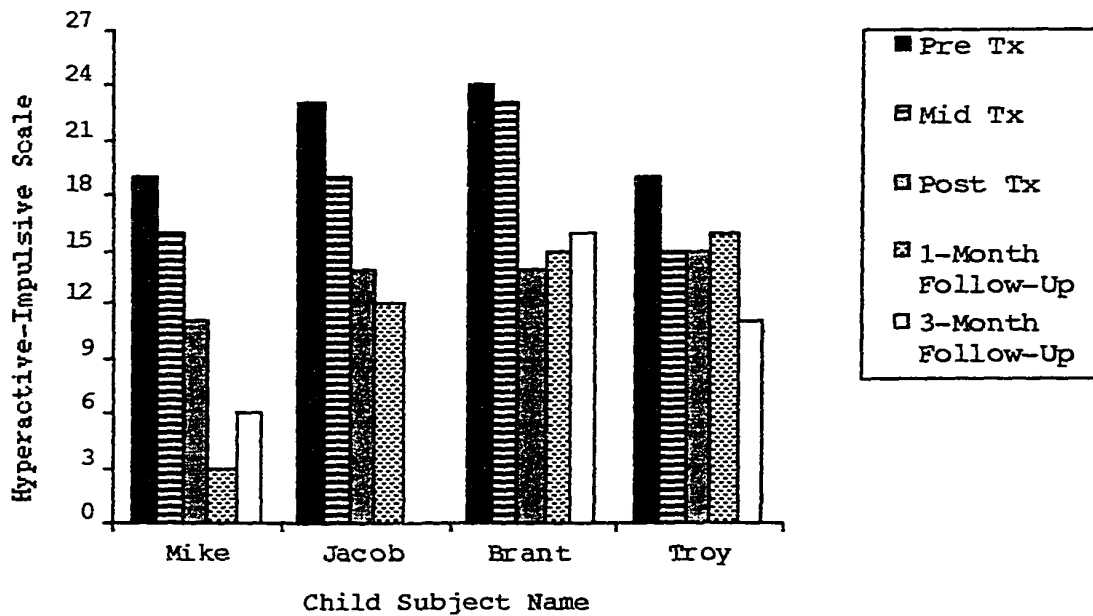


Figure 20a. Home Situations Questionnaire (HSQ) Number of Endorsed Problem Situations at Pre-Treatment, Mid-Treatment, Post-Treatment, 1-Month and 3-Month Follow-Up.

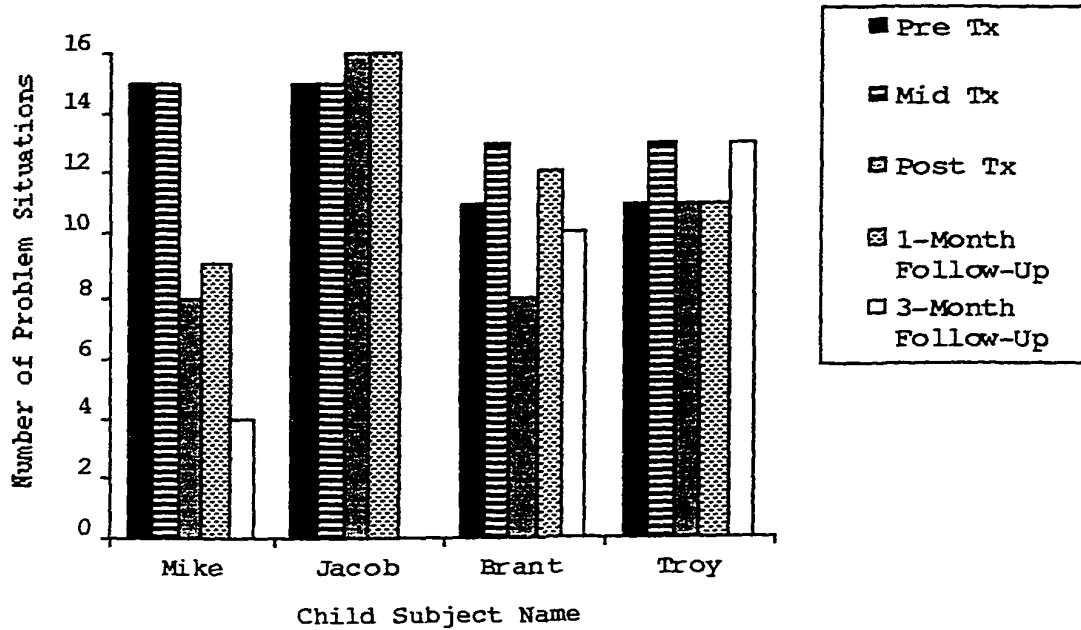


Figure 20b. HSQ Problem Severity Ratings at Pre-Treatment, Mid-Treatment, Post-Treatment, 1-Month and 3-Month Follow-Up.

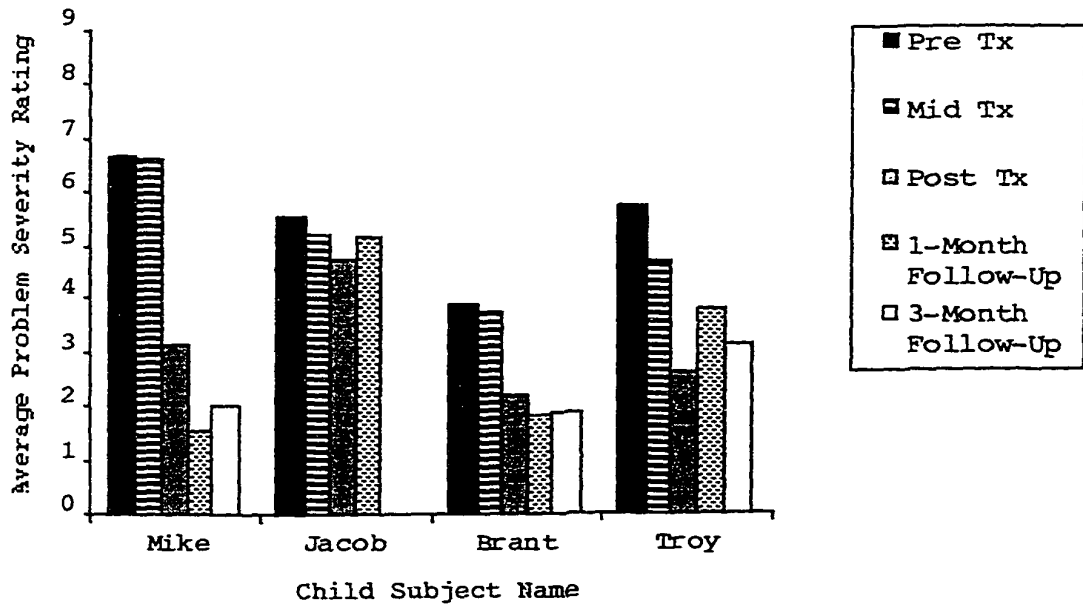
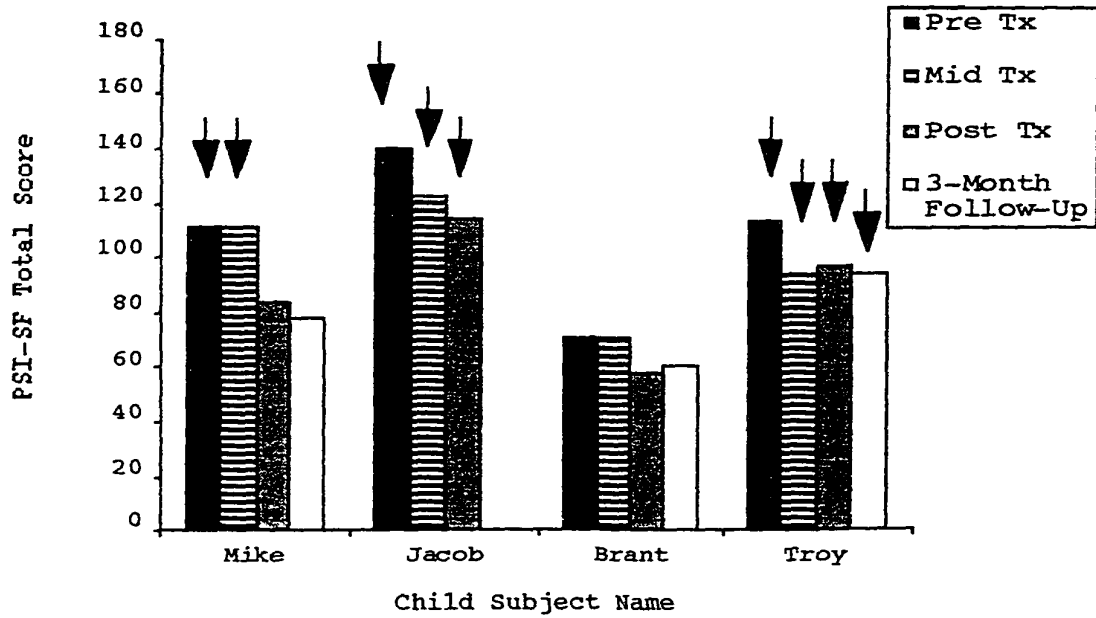
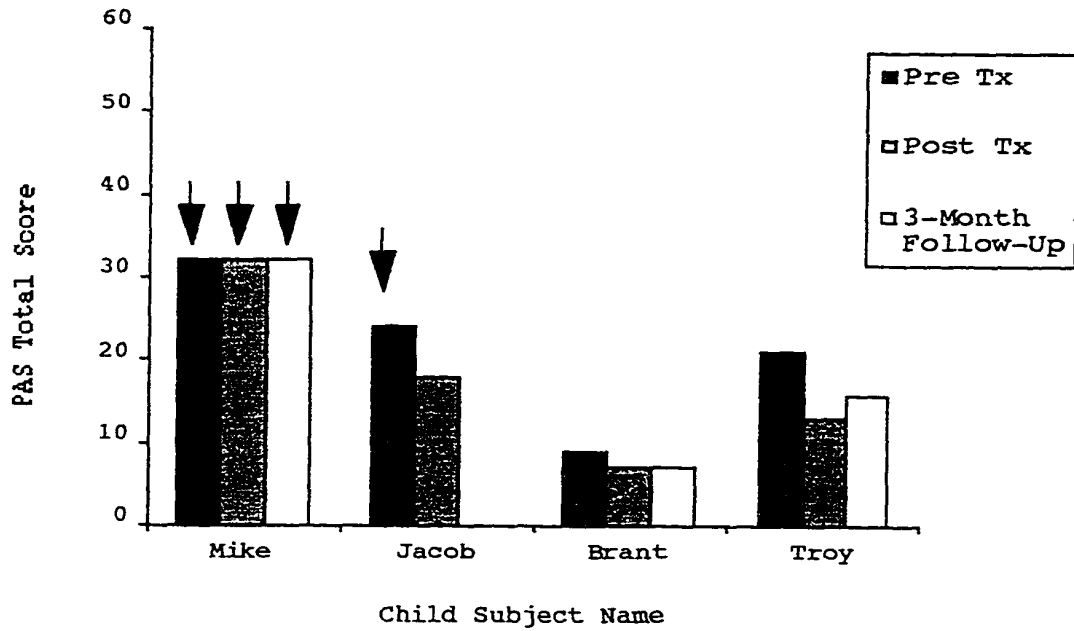


Figure 21. Parenting Stress as Measured by the Parenting Stress Index-Short Form (PSI-SF) at Pre-Treatment, Mid-Treatment, Post-Treatment, and 3-Month Follow-Up.



Note: Arrows designate scores greater than clinical cutoffs for a nonpatient female population according to the PSI-SF Manual (Abidin, 1995).

Figure 22. Parent Psychopathology as Measured by the Personality Assessment Screener (PAS) at Pre-Treatment, Post-Treatment, and 3-Month Follow-Up.



Note: Arrows designate scores greater than clinical cutoffs for a nonpatient female population according to the PAS Manual (Morey, 1997).

according to Morey (1997). Only the scores for Jacob's mother decreased to within a clinically insignificant range at posttreatment. Three out of 4 subjects did decrease their report of symptoms at posttreatment; however, few inferences from this can be drawn due to relatively low initial scores for 2 subjects (Brant, Troy). Treatment appeared to have little effect on perceptions of psychopathology. Furthermore, clinically significant maternal psychopathology did not appear to prevent treatment gains for Mike and Jacob.

Treatment Implementation

Treatment implementation was monitored throughout the study to examine treatment continuity and compliance. Mike, Brant, and Troy participated in the entire treatment program. Jacob and his mother prematurely dropped out of treatment due to an upcoming family move and associated stresses. Both Mike and Troy completed the program without missing any scheduled appointments. Brant and his family canceled one appointment, but rescheduled. Jacob and his mother canceled 4 appointments during treatment and failed to call for an additionally missed session. Consequently, in addition to prematurely terminating treatment, Jacob's treatment was less continuous than other subjects. To ensure treatment compliance, subjects failing to adequately complete homework assignments were asked to repeat the previous session to allow time for completion. Two subjects required one session to be repeated (Brant and Troy). Jacob and his mother required that 2 sessions be repeated due to inadequate homework completion.

A behavioral knowledge test was additionally administered before and after treatment to assess parent's understanding of behavioral principles. On the average, parents gave 8.75 out of a possible 13 correct responses to items from the behavioral knowledge survey at pre-treatment (range 7-13). At posttreatment, parent's averaged 9.5 correct responses (range 9-11), indicating only slight improvement. One parent's score decreased (Mike), one parent showed no change (Brant), and two parents increased their score by 2 points (Jacob and Troy). This lack of improvement in parent scores could indicate a failure to learn the behavioral principles utilized in this program; however, parents commented at pre- and post-treatment that the behavioral knowledge test was confusing and difficult to complete. Consequently, this test may not have adequately assessed parent understanding of treatment concepts.

Parent Treatment Satisfaction

All four subjects rated the quality of the therapeutic relationship and treatment components very highly on the satisfaction questionnaire. All questions were rated "5" or higher ("slightly improved" to "greatly improved") with regard to their child's behavior. No questions were rated less than "6" (or "high" to "superior") regarding parents' view of therapist performance. In response to open-ended questions, parents reported the following components as "most helpful": "learning to increase my child's attention" (Mike), "learning to give and follow-up on commands" (Brant), "steps to change my child's unwanted behavior" (Jacob), and "learning to direct a command properly"

(Troy). Parents stated the following areas for improvement: "make the program longer" (Mike), "nothing" (Brant, Jacob), and "decrease appointments to 1 time per week" (Troy).

During a posttreatment interview, two parent participants mentioned that they had previously completed a parenting program which did not include an attention focus, bug-in-the-ear practice or modeling. Mike's mother noted not having previously understood where she was misimplementing strategies until the therapist coaching procedures included in this treatment program. Brant's mother reported appreciating practice and modeling sessions instead of only receiving descriptive handouts. When asked about specific treatment components, Mike's mother further described surprise at the increase in her child's attention having previously viewed her child's symptoms as unchangeable if not under the influence of medication. Troy's mother reported being most satisfied with Troy's increased independence in task completion at home (e.g., chores).

Comparison of Subjects Who Completed and Dropped Out of Treatment

During the course of this study, 5 subjects dropped out of the program. One subject dropped out 2 days following their initial assessment session due to a serious car accident. Another subject (Jacob) almost completed the entire treatment program, and volunteered to complete the 1-month follow-up session. Jacob's family moved three sessions prior to the end of treatment making transportation to Auburn more difficult. Three additional subjects did not complete treatment for a variety of reasons: father's job change to the evening shift

(Chad), mother's new responsibility to care for a relative's infant twins (Christian), and unexplained reasons despite 5 attempted phone contacts (John).

Table 6 displays average characteristics summarized across those subjects who completed and dropped out of treatment. An examination of demographic characteristics revealed that the families of subjects who dropped out of treatment reported a much lower income than those who completed treatment. Furthermore, the mothers who failed to complete the program also reported more stress (see PSI Total) and more behavior problems in their children (see BASC and DBDRS). These maternal reports appear to be contradicted by laboratory observations of their children's behavior during baseline sessions. Observed rates of child noncompliance in those children who dropped out of treatment were much lower (mean = 20.4 incidents, range 13% to 42% of total coded intervals, see Figure 14) than those observed for children who completed treatment (mean = 39.6, range 25% to 92% total coded intervals). Similarly, observations of off-task behavior were lower in subjects who dropped out of treatment (mean = 8 baseline incidents, see Figure 15) than subjects who completed treatment (mean = 17.4 baseline incidents). Behavioral data for the subjects who dropped out of treatment appear to indicate less severe treatment needs. It could be the case that elevated rating scale perceptions of child behavior problems reflect the previously noted greater stress among these parents.

Table 6.

Comparison of Participants Who Completed and Dropped Out of Treatment

Demographic Variable	Dropped Out (Jacob, Chad, John, Christian)	Completed Treatment (Mike, Brant, Troy)
Mean Age	9 years, 7 months	8 years, 1 month
Family Income	\$35,200	\$60,333
# Married Parents	3 out of 4	2 out of 3
# Caucasian	4 out of 4	1 out of 3
Parent Functioning		
PSI Total Score	107.50	98.30
PAS Total Score	20.00	20.67
Behavior Rating Scales		
BASC-Parent Externalizing	85.75	71.30
DBDRS Inattention	23.25	22.67
DBDRS Hyperactive	24.75	20.67
HSQ # Problems	14.00	12.33
HSQ Problem Severity	5.81	5.43

Note: Data on subjects who dropped out of treatment does not include one subject who terminated treatment due to a serious car accident after the initial interview session.

IV. DISCUSSION

The purpose of this study was to investigate the influence of a parenting treatment program which emphasized behavioral techniques to modify both child noncompliant and off-task behavior. Several hypotheses to address treatment outcomes were proposed. First, it was hypothesized that reduced levels of child noncompliance would be observed during the intervention's emphasis on compliance, while no concurrent decreases would be observed in levels of the ADHD child's inattention, or off-task behavior. Increases from baseline levels of observed child inattention were not anticipated until the intervention's emphasis turned to structured academic tasks. Second, it was hypothesized that decreases in parent behavior rating scales on conduct and attention problems would be noted concurrent with behavioral observations in response to treatment. Finally, it was hypothesized that the parenting intervention would reduce perceived levels of parenting stress and have mixed effects on reports of parental psychopathology.

Previous studies examining parenting programs with ADHD children have primarily focused upon behavioral techniques to decrease child noncompliance, often neglecting to include treatment components which address the needs of ADHD children beyond those of noncompliant children. Group designs also dominate parenting treatment outcome studies with the families of ADHD children. These designs typically do not allow for an interpretation of the influence of individual subject

characteristics and/or treatment implementation processes on outcomes. This study adds to previous empirical investigations of parenting programs with ADHD children by utilizing a single subject design to examine the outcome of a parenting program with components designed to address noncompliant and off-task child behaviors. To supplement previous research findings, this discussion will consider the influence of subject characteristics, treatment compliance, and implementation on individual outcomes.

The first set of findings concern the treatment program's effect on observed incidents of child noncompliant behavior. As hypothesized, the present study confirmed the effectiveness of parenting interventions in decreasing laboratory-observed child noncompliance to parent requests. This finding is consistent with other parent training outcome research investigating parent-child interactions with the families of ADHD children (Erhardt & Baker, 1990; Pisterman et al., 1989, 1992b) and oppositional, non-ADHD children (e.g., Forehand & McMahon, 1981; Eisenstadt, Eyberg, McNeil, Newcomb, & Funderburk, 1993; Webster-Stratton, 1984). Results from the HSQ further demonstrate changes in child noncompliance at home. Although parents continued to note several situations in which they experienced behavior problems at home, the perceived severity of these problems decreased across all subjects to beneath clinically significant levels at posttreatment and follow-up. Parent reported HSQ results indicate that laboratory-observed treatment effects on noncompliance appeared to have generalized to the home setting. Again, these results are consistent with the results of several studies in which parent reports of ADHD child behavior problems

decreased in response to parenting interventions (Barkley et al., 1992; Bidder et al., 1978; Blakemore et al., 1997; Dubey & Kaufman, 1978; Dubey et al., 1983).

Despite decreased observations of overall child noncompliance, child subjects showed little change in rates of initial compliance with the prompted parent command. Observations of initial compliance were designed as a measure of the child's ability to immediately (within 10 seconds) follow a parent's request. Typically, the boys initially complied with none or only 1 of the prompted commands throughout treatment. Therapists and coders who observed parent-child interactions reported that switching activities seemed especially difficult for child subjects. When a parent issued a prompted command, the ADHD child was often already engaged with another toy. This first command was frequently ignored while the child continued to play until repeatedly prompted by the parent to change toys. The longer it took the child to comply with the prompted command, the less time available to play with a newly engaging toy. The less time allowed with a toy, the more difficult it was for the child to leave it. Observers reported that child noncompliance after the child switched to a new toy was less frequent (with the possible exception of a particularly disliked activity--the crayons and paper). Consequently, decreases in overall noncompliance most likely indicate increases in the degree of sustained compliance, but not immediate response to maternal commands.

Observations of child negative behavior throughout treatment appeared to parallel noncompliance, but occurred less frequently. Previous parenting outcome studies have found insignificant treatment

responses in non-targeted child behaviors with ADHD children, such as parent ratings of child aggression (Erhardt & Baker, 1990) or observations of inappropriate behaviors (Pisterman et al., 1989). The present study supported these previous findings. Observations of child negative behavior actually increased for most subjects in response to treatment. One subject continued to show more negative behavior at the end of treatment than at baseline. In addition, parent ratings of conduct problems and aggression on the BASC showed little pre to posttreatment change. The subject rated with the most conduct and aggression problems showed the greatest decrease in parent ratings, but continued to score above the 95th percentile for a child his age. It is important to note that with the exception of this previous child, the subjects in the study did not demonstrate significant parent-rated aggression problems. Consequently, the other subjects' ratings at pre and posttreatment remained beneath clinically problematic levels. In addition, this treatment program was designed to address child aggression only within the context of noncompliance to parent requests. It is likely that additional treatment components designed to specifically address child aggression would produce greater posttreatment reductions in this target behavior.

Parent-child observations revealed possible trends in observed rates of child noncompliance and negativity in relation to treatment components. Parent instruction on positive reinforcement (sessions 5-6) were concurrent with a slight decrease in child noncompliance for 2 subjects (Mike and Brant), but this decrease was not maintained. Parent instruction of more effective command styles (sessions 7-8) appeared to

have little direct effect on child noncompliance. A downward trend appeared to occur for 3 subjects (Jacob, Brant, and Troy) in observations of child noncompliance across sessions 9-11. These sessions included explanations of time-out from reinforcement followed by the videotape observation and practice session. For Jacob, Brant, and Troy one of these sessions was also repeated due to parental failure to adequately complete homework. This study does not allow for conclusions regarding which of these treatment components was most influential; however, it seems reasonable to conclude that some combination of time-out, observation and practice, or parental adherence to treatment was important in decreasing noncompliance.

The influence of time-out and parent practice has been documented in previous outcome literature. In a similar multiple baseline procedure, Henry (1987) found the most significant posttreatment behavioral effects in decreased child noncompliance directly following the implementation of time-out procedures. The aid of parent coached bug-in-the-ear practice has also been well-validated through Parent-Child Interaction Therapy (PCIT; Hembree-Kigin & McNeil, 1995) and its related research (e.g., Eisenstadt et al., 1993; Eyberg & Matarazzo, 1980). However, the role of parental adherence to treatment has not been sufficiently examined. Future researchers should continue to analyze the influence of time-out, practice, and particularly treatment compliance on parenting intervention outcomes.

Similar to previous research on parenting interventions with ADHD children, the present study demonstrated parent behavior change in

response to treatment. Three out of 4 parents decreased the number of commands issued to their children and all 4 parents decreased the number of times they stated repeated commands. Three out of 4 parents also increased the number of times they praised their child during parent-child observations. These findings are consistent with past parent outcome studies revealing similar decreases in parental commands and increases in praise in the families of ADHD children (Barkley et al., 1992; Erhardt & Baker, 1992; Pelham et al., 1980; Pisterman et al., 1989, 1992b; Pollard et al., 1984).

An examination of parent and child behavior change patterns across treatment sessions reveals the gradual, but not immediate, response to treatment components. Beginning treatment appeared to lead to initial variability in child noncompliance followed by a gradual decrease. Noncompliant behavior in 3 subjects did not stabilize at a decreased rate from baseline until the treatment's focus on academic situations. Parent behaviors showed similar individual variability. Two parents increased praise statements following the session focusing on positive reinforcement, while 2 did not increase such statements. Furthermore, incidents of parent approval and commands were not stable for subjects during the compliance focus of treatment. More consistent rates of approval and commands in the desired directions were noted during the final 5 treatment sessions. This initial variability and subsequent stabilization in parent and child behaviors likely reflects adjustment to new parent-child interaction styles. For example, Troy and Jacob's mothers were less assertive and interactive during baseline observations than the mothers of Brant and Mike. The treatment program involved

asking the parents to use an assertive command style and consistent discipline for noncompliance. Negative behaviors in both Jacob and Troy increased with the initiation of treatment. This increase and subsequent decrease in negative behaviors for both boys could be described as an extinction burst or, as explained by one mother, "he's testing the limits."

The initial variability and gradual stabilization for parent and child behaviors across the course of treatment in this study has implications for parenting interventions. Many treatment programs, particularly parent groups, focus only on the instruction of parents in behavioral strategies. Programs that utilize only didactic instruction may not allow sufficient time for parent skill acquisition and maintenance. Furthermore, immediate posttreatment observations of parent-child interactions may underestimate treatment effects. In the present study, parent and child behaviors did not stabilize in the desired directions until 2-4 sessions after didactic instruction, but were maintained at both 1- and 3-month follow-up observations. To insure that parents understand, have acquired, and will be able to maintain skills, treatment programs should ideally allow time after initial instruction for continued practice and strategy review.

The second major subset of findings concerns the treatment program's effect on observed incidents of child off-task behavior. As hypothesized, no stable decrease in observations of off-task behavior was observed during the treatment's emphasis on compliance. This finding is consistent with previous research on parenting interventions with ADHD children in which no posttreatment reduction in laboratory-

observed child inattention was found (Dubey et al, 1983; Pisterman et al., 1989, 1992b). Parent ratings on the Inattention Scale of the DBDRS also failed to show consistent decreases from pre to midtreatment (following compliance training) across subjects. Contrary to the Inattention Scale, all 4 parents did rate their children's Hyperactive-Impulsive behavior on the DBDRS as lower at midtreatment. Inconsistent parent reports parallel other studies which sometimes indicated decreases in reports of child ADHD symptoms (Anastopoulos et al., 1993; Dubey & Kaufman, 1978; Dubey et al., 1983; Erhardt & Baker, 1990), while other studies indicated no change (Pisterman et al., 1989).

Following treatment sessions which focused on a structured academic task, 3 out of 4 subjects demonstrated decreased rates of off-task behavior. Consistently low off-task behavior was maintained 3 months after treatment for 2 subjects, and 1 month after treatment for the third subject. Parent reported rates of inattentive and hyperactive behavior on the DBDRS corroborated these results indicating a post-treatment decrease for all subjects. As previous classroom and laboratory research has discovered, ADHD symptomatic behaviors are responsive to structured contingencies (Gordon et al., 1991; Northup et al., 1995). Empirical studies have indicated that experimenters, peers, teachers, and even ADHD children themselves can provide effective contingencies for decreasing off-task behavior (e.g., Bowers et al., 1985). The present study indicates that parents too can be taught to successfully utilize these same strategies. Given this finding, it is important to note that more traditional parenting interventions utilized with ADHD children (i.e., without an academic focus or practice

sessions) would have ended following this treatment's compliance emphasis. Results of the current study support the previously stated hypothesis that traditional parenting interventions must be supplemented to better meet the needs of ADHD children, separate from those of solely oppositional children.

It should be noted that these results stand in conflict with those found by Pisterman and colleagues (1992b) who utilized the protocol which served as a model for this program. Two components of the current study distinguish it from the study by Pisterman et al. (1992b). First, the present study involved school-age children as opposed to preschool children. Due to developmental maturation, school-age children likely have less unpredictable and variable attention levels than preschool children. Less behavior variability likely led to increased treatment outcome consistency among subjects. Second, the present study supplemented Pisterman's treatment protocol with coached bug-in-the-ear practice. Although the study did not involve a comparison of treatment effects with and without coached practice, it seems reasonable to conclude that the practice would enhance treatment effectiveness.

When compared to the treatment response of child noncompliant behavior, observed off-task behavior seems to have responded more quickly. Although child noncompliance showed a pattern of initial variability, then stabilization, rates of child off-task behavior decreased and stabilized without variation for the 3 subjects whose off-task behavior responded to treatment. No particular session appeared more influential than another. An expedited response during the academic task portion of treatment may have been due to previous

knowledge and experience with the treatment's behavioral strategies. The attention focus of treatment involved working with parents on applying the similar strategies in an academic homework situation; consequently, both parent and child were familiar with their use. In addition, the academic situation was even more structured than the parent-child interaction observation period. During the academic task, children were required to remain seated and comply with only one task instruction (doing math problems). This more restricted setting also could have increased treatment response speed.

No change in off-task behavior was found when children were not supervised by their parents. Despite decreases in off-task behavior with parent supervision, this decrease did not appear to generalize to an unsupervised setting. This finding indicates that the decreased off-task behavior exhibited by ADHD children with parent supervision more likely reflects parents' acquired ability to better manage their child's attention than a distinct behavior change within the child. Given that all home and clinic-based practice sessions included parent supervision, it is also probable that parents served as a cue for increased demands for the child's on-task behavior. When the parent was not present, the child may not have perceived demands to maintain on-task behavior. To insure greater generalization to unsupervised situations, the treatment program could have alternated practice sessions with and without parent supervision while equally emphasizing rewards and consequences for off-task behavior.

This treatment program focused behavioral strategies directly on off-task behavior, and not on other typical ADHD behaviors or math

performance. Consequently, it is not surprising that treatment effects failed to generalize to incidents of child fidgeting or off-task vocalizations. It is likely that each of these behaviors would need individual treatment focus to promote decreases in occurrence. Treatment also appeared to not reliably increase the number of math problems completed by the child. In fact, there was some evidence that problem accuracy may have decreased. With the focus on increased attention to task materials, children might have become increasingly careless and parents might have become less concerned about their child's errors. Other research using behavioral strategies to increase on-task behavior among ADHD children has similarly failed to find an accompanying increase in academic performance (e.g., Hoza et al., 1992). In addition, research indicates that the reinforcement of correct or accurate responses leads to a decrease in performance errors (Ayllon et al., 1975; Hoza et al., 1992; Williams & Lahey, 1977) and could also decrease hyperactive behaviors (Ayllon et al., 1975). Consequently, future research should utilize similar parent-directed behavioral strategies, but apply them to task accuracy and continue to monitor their effect on ADHD child behavior.

The present study also hypothesized that treatment would not only affect child and parent behaviors, but also parent perceptions of stress and possibly psychopathology. Consistent with this hypothesis, results indicated decreased reports of stress following treatment across mothers; however, treatment appeared to have little effect on reports of psychopathology. These results are consistent with similar parent training outcomes with the families of ADHD children in which stress

decreased, (Anastopoulos et al., 1993; Blakemore et al., 1997; Pisterman et al., 1992a) but reports of psychological functioning showed no change (Anastopoulos et al., 1993; Barkley et al., 1992). It is important to note that perceived rates of high maternal stress and psychopathology did not appear to deter positive posttreatment outcomes. Three out of four mothers endorsed particularly high baseline stress levels, with two mothers additionally indicating the presence of psychological difficulties; however, all four families benefited from treatment. In fact, Mike, whose mother rated herself most highly on the psychopathology measure, achieved positive outcomes consistent with Troy and Brant, and made more improvement than Jacob. Furthermore, Brant's mother, who reported the lowest levels of stress and psychopathology, showed no faster treatment response or greater benefit.

Various treatment responses were found in this study with regard to parent report and behavior, as well as to rates of child noncompliance and inattention. A portion of this variability appeared to be explained by treatment implementation and compliance. In particular, homework completion seemed to have played an important role in outcomes, especially for the academic focus. As previously described, only Jacob demonstrated no response to the academic portion of treatment. Mike, Troy, and Brant's families reliably completed homework assignments throughout the study. Jacob's mother completed homework assignments during the compliance focus of treatment, but failed to complete any home practice for academic task situations. She also sporadically attended this portion of treatment, and dropped out of the study before it was completed. The lack of change noted in

observations of Jacob's off-task behavior might be explained by poor treatment integrity caused by inconsistent attendance and homework completion.

Individual child characteristics could also have played a role in various treatment outcomes. For instance, Brant was the only child diagnosed with a learning disability in math. When compared to the other child subjects, Brant demonstrated greater inconsistency in rates of off-task behavior throughout treatment and follow-up. His learning disability could have made stable rates of attention during home practice and laboratory observations more problematic. Jacob's treatment response might have been similarly influenced by his behavior problems. When compared to the other child subjects, Jacob was described by his mother as having more aggression and conduct problems. Following the compliance focus of treatment, Jacob's mother reported improvement in Jacob's behavior and a decrease in her reported stress and psychopathology levels. This portion of treatment may have best addressed the family's needs, leaving Jacob's mother less motivated to complete homework assignments and treatment once the focus switched to an academic setting. Consequently, Jacob showed improvement in rates of noncompliance, but not off-task behavior.

Family characteristics likely also influenced the magnitude of treatment effects. At the conclusion of treatment, Troy's mother reported regret that her husband was unable to attend treatment sessions. She described inconsistencies in the ways in which she and her husband dealt with Troy's misbehavior. In her opinion, this inconsistency likely inhibited greater treatment benefits for their

family. Mike's mother was a single parent and Brant's father participated in 2/3 of his treatment sessions. Total family caretaker involvement was probably a key factor in maximizing treatment response. Similarly, family familiarity with treatment procedures could have enhanced treatment gains. For example, Brant's mother described already having an established nightly homework period with her children, even during the summer months. Consequently, she was able to integrate attention practice sessions into this previously established routine. Academic task observations demonstrated that Brant achieved the highest percentage decrease in off-task behavior and increase in time-on-task.

Previous studies with the families of ADHD children have similarly demonstrated variability in treatment outcomes across measures (Pelham et al., 1983) and behavioral observations (Henry, 1987). The results of the current study support findings which indicate that individual responses to treatment vary across levels of treatment compliance, implementation, and child or family characteristics. Given this response variability, single pre/post treatment outcome measures likely under- or overestimate outcomes depending upon individual treatment response patterns. Variable individual outcomes demonstrate the continued importance of research methods which allow multiple examinations of subject change over the course of treatment. To best examine the roots of outcome variability and to improve treatment services, research designs should include a thorough pre-treatment family assessment of parent and child characteristics, as well as comprehensive records of treatment implementation. Future research should especially continue to monitor the influence of treatment

integrity and compliance on the magnitude and speed of treatment-related change.

The results of the current study should be tempered by an appreciation of its restricted sample. This study included only mothers as target parents (although 2 fathers did occasionally participate in treatment) and ADHD boys between 8 and 10 years of age. All children also presented with both oppositional and ADHD characteristics. The limited nature of this sample restricts its generalizability to other populations. Given the experimental nature of an academic focus in this treatment program, a particularly homogenous sample was selected to best test outcomes. Future research should examine the effectiveness of similar parenting interventions with fathers and slightly older and/or younger children. It would also be interesting to examine the differential treatment effects of a similar program with ADHD children who exhibit high and low levels of oppositional behavior.

The generalizability of this study is further limited by its laboratory environment. Every effort was made to create observation and treatment rooms which resembled an outpatient clinic; however, observations of parent-child interactions and academic tasks were artificially contrived and sometimes questioned by the children (e.g., "Mom, why are you talking so funny...Why is that mirror there?"). It could be argued that children behaved differently because they were being observed. Parents could also have learned only to apply treatment strategies for child noncompliance and off-task behavior during these laboratory-based parent-child and academic observational settings. Two efforts were made to counteract these possibilities. First, parents

were questioned at baseline regarding the validity of their child's behavior. Parents reported particularly compliant and attentive behavior during initial observation periods, but indicated the normalization (and sometimes worsening) of child behavior as baseline progressed. To aid in the generalization of treatment skills, clinic practice sessions were designed to include activities, commands, and academic task materials which differed from observation periods. Nevertheless, treatment results could have been different had the program been conducted in the families' homes with home-based observations. Future research should extend the generalizability of these results by examining families in their natural environment.

Despite its limitations, this study has a major implication for the treatment of ADHD children and their families. The majority of research on parenting interventions with ADHD children have examined treatment programs originally designed for oppositional behavior problems. Given the high degree of comorbidity between ADHD and oppositional behavior disorders, this treatment selection is well-validated. As described earlier, several studies have indicated the effectiveness of these programs at decreasing behaviors which the programs were designed to target (e.g., noncompliance). As would be expected, these programs do not reliably affect other behaviors (e.g., inattention) which they were not designed to address. Consequently, many families of ADHD children could complete parenting interventions with unmet needs. For instance, anecdotal reports from parents of ADHD children indicate frustration associated with extensive evening time devoted to homework and chore completion. These difficulties are likely

exacerbated by medication regimens which leave children unmedicated during evenings and weekends. This study indicates that parenting interventions for ADHD children could capitalize and expand upon the treatment effectiveness of such programs for child noncompliance. Parenting programs might be extended with similar behavioral strategies and parent training to specifically address attention during homework completion and similar tasks. Results of this study indicate that mothers can learn to recognize their child's off-task behavior and apply behavioral strategies which aid in their child's task completion. Future parenting treatment research should further evaluate these findings in hopes of increasing our understanding of interventions which might better meet the needs of ADHD children and their families.

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APPENDICES

APPENDIX A

Subject Number _____

PCSQ Page 1 of 3

Date _____

Parent's Consumer Satisfaction Questionnaire

The following questionnaire is part of our evaluation of the treatment program that you have received. It is important that you answer as honestly as possible. The information obtained will help us evaluate and continually improve the program we offer. Your cooperation is greatly appreciated.

A. The Overall Program

1. The major problem(s) that originally prompted me to begin treatment for my child is (are) at this point

considerably worse	worse	slightly worse	the same	slightly improved	improved	greatly improved
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2. My child's problems that have been treated at the clinic are at this point

considerably worse	worse	slightly worse	the same	slightly improved	improved	greatly improved
--------------------	-------	----------------	----------	-------------------	----------	------------------

3. My child's problems that have not been treated at the clinic are

considerably worse	worse	slightly worse	the same	slightly improved	improved	greatly improved
--------------------	-------	----------------	----------	-------------------	----------	------------------

4. My feelings at this point about my child's progress are that I am

very dissatisfied	dissatisfied	slightly dissatisfied	the same	slightly satisfied	satisfied	very satisfied
-------------------	--------------	-----------------------	----------	--------------------	-----------	----------------

5. To what degree has the treatment program helped with other general personal or family problems not directly related to your child?

hurt more than helped	hurt	hurt slightly	neither or hurt	helped slightly	helped	helped very much
-----------------------	------	---------------	-----------------	-----------------	--------	------------------

6. I feel the approach to treating my child's behavior problems in the home by using this type of parenting program is

very inappro- priate	inappro- priate	slightly inappro- priate	neutral	slightly appro- priate	appropriate	very appro- priate
----------------------------	--------------------	--------------------------------	---------	------------------------------	-------------	--------------------------

7. Would you recommend the program to a friend or relative?

strongly recommend	recom- mend	slightly recommend	neutral	slightly recommend	not recom- mend	strongly recommend
-----------------------	----------------	-----------------------	---------	-----------------------	-----------------------	-----------------------

8. How confident are you in managing *current* behavior problems in the home on your own?

very confident unconfident	confident	somewhat confident	neutral	somewhat unconfident	unconfident	very confident
----------------------------------	-----------	-----------------------	---------	-------------------------	-------------	-------------------

9. How confident are you in your ability to manage *future* behavior problems in the home using what you learned from this program?

very confident	confident	somewhat confident	neutral	somewhat unconfident	unconfident	very unconfident
-------------------	-----------	-----------------------	---------	-------------------------	-------------	---------------------

10. My overall feeling about the treatment program for my child and family is

very negative	negative	somewhat negative	neutral	slightly positive	positive	very positive
------------------	----------	----------------------	---------	----------------------	----------	------------------

B. Therapist

1. I feel that the therapist's teaching was

very poor	fair	slightly below average	average	slightly above average	high	superior
--------------	------	---------------------------	---------	---------------------------	------	----------

2. The therapist's preparation was

very poor	fair	slightly below average	average	slightly above average	high	superior
--------------	------	---------------------------	---------	---------------------------	------	----------

3. Concerning the therapist's interest and concern in me and my problems with my child, I was

very dissatisfied dissatisfied slightly dissatisfied the same slightly satisfied satisfied very satisfied

4. At this point, I feel that the therapist in the treatment program was

extremely not slightly neutral slightly helpful extremely
not helpful helpful helpful helpful helpful helpful

5. Concerning my personal feelings toward the therapist

I dislike I dislike I dislike I have a I like I like I like
him/her him/her him/her neutral him/her him/her him/her
very much slightly attitude slightly very much
toward
him/her

C. Your Opinion Please

1. What part of the program was most helpful to you?
2. What part of the program was least helpful to you?
3. How could the program have been improved to help you more?

Scoring Instructions

A. Overall program

Items 1, 2, 3, 4, 5, 6, 9, and 10 are scored on a 1- to 7-point scale (i.e., if the first answer is circled, the item is assigned a point value of 1, if the second answer is circled, the item is assigned a point value of 2, etc.), while items 7 and 8 are scored on a 7- to 1-point scale.

B. Therapist

Score all items on a 1- to 7-point scale.

APPENDIX B

Session #: _____ Subject #: _____ Date: _____ Grade: 3

$$\begin{array}{r} 41 \\ -13 \\ \hline \end{array}$$

$$\begin{array}{r} 712 \\ +234 \\ \hline \end{array}$$

$$\begin{array}{r} 91 \\ -29 \\ \hline \end{array}$$

$$\begin{array}{r} 827 \\ -478 \\ \hline \end{array}$$

$$\begin{array}{r} 17 \\ +82 \\ \hline \end{array}$$

$$\begin{array}{r} 878 \\ +139 \\ \hline \end{array}$$

$$\begin{array}{r} 56 \\ +32 \\ \hline \end{array}$$

$$\begin{array}{r} 71 \\ -54 \\ \hline \end{array}$$

$$\begin{array}{r} 798 \\ -479 \\ \hline \end{array}$$

$$\begin{array}{r} 53 \\ +48 \\ \hline \end{array}$$

$$\begin{array}{r} 19 \\ -13 \\ \hline \end{array}$$

$$\begin{array}{r} 92 \\ +45 \\ \hline \end{array}$$

$$\begin{array}{r} 37 \\ -21 \\ \hline \end{array}$$

$$\begin{array}{r} 98 \\ +31 \\ \hline \end{array}$$

$$\begin{array}{r} 56 \\ +51 \\ \hline \end{array}$$

$$\begin{array}{r} 896 \\ -327 \\ \hline \end{array}$$

$$\begin{array}{r} 71 \\ -47 \\ \hline \end{array}$$

$$\begin{array}{r} 938 \\ +199 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ -5 \\ \hline \end{array}$$

$$\begin{array}{r} 64 \\ +50 \\ \hline \end{array}$$

APPENDIX C**PARENT/CHILD TASK INTERACTION CODING FORM**

Coding Pg. #1

Subject # _____ Session # _____ Coder _____ Date Coded _____

Minute 1 started at _____ Min. _____ Sec. on Videotape

		A	A	A	A	A	A	A	Cn	Cn	Cn	Cn	Cn	Cn	Pn	Pn	Pn	Pn	Pn	Pn	Pn																
C O M M A N D	1	1	Icpy						2	Cpy	Ncpy				3	Cpy	Ncpy					4	Cpy	Ncpy			5	Cpy	Ncpy			6	Cpy	Ncpy			
		Incpy							RC	C					RC	C					RC	C			RC	C			RC	C							
		RC	RC						C	C					C	C					C	C			C	C			C	C							
	1	7	Cpy	Ncpy						8	Cpy	Ncpy				9	Cpy	Ncpy					10	Cpy	Ncpy			11	Cpy	Ncpy			12	Cpy	Ncpy		
		RC	C						RC	C					RC	C					RC	C			RC	C			RC	C							
		C	C						C	C					C	C					C	C			C	C			C	C							
C O M M A N D	2	1	Icpy						2	Cpy	Ncpy				3	Cpy	Ncpy					4	Cpy	Ncpy			5	Cpy	Ncpy			6	Cpy	Ncpy			
		Incpy							RC	C					RC	C					RC	C			RC	C			RC	C							
		RC	RC						C	C					C	C					C	C			C	C			C	C							
	2	7	Cpy	Ncpy						8	Cpy	Ncpy				9	Cpy	Ncpy					10	Cpy	Ncpy			11	Cpy	Ncpy			12	Cpy	Ncpy		
		RC	C						RC	C					RC	C					RC	C			RC	C			RC	C							
		C	C						C	C					C	C					C	C			C	C			C	C							
C O M M A N D	3	1	Icpy						2	Cpy	Ncpy				3	Cpy	Ncpy					4	Cpy	Ncpy			5	Cpy	Ncpy			6	Cpy	Ncpy			
		Incpy							RC	C					RC	C					RC	C			RC	C			RC	C							
		RC	RC						C	C					C	C					C	C			C	C			C	C							
	3	7	Cpy	Ncpy						8	Cpy	Ncpy				9	Cpy	Ncpy					10	Cpy	Ncpy			11	Cpy	Ncpy			12	Cpy	Ncpy		
		RC	C						RC	C					RC	C					RC	C			RC	C			RC	C							
		C	C						C	C					C	C					C	C			C	C			C	C							

PARENT/CHILD TASK INTERACTION CODING FORM

Coding Pg. #2

		A	A	A	A	A	A	A	Cn	Cn	Cn	Cn	Cn	Cn	Pn	Pn	Pn	Pn	Pn	Pn	Pn
C O M M A N D	1	Icpy	Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		
		Incpy	RC	C	RC	C	RC	C	RC	C	RC	C	RC	C	RC	C	RC	C	RC	C	
		RC	RC	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	4	7	Cpy Ncpy	Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy	
		8	Cpy Ncpy	Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy	
		9	Cpy Ncpy	Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy	
5	1	Icpy	Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		
		Incpy	RC	C	RC	C	RC	C	RC	C	RC	C	RC	C	RC	C	RC	C	RC	C	
		RC	RC	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	5	7	Cpy Ncpy	Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy	
		8	Cpy Ncpy	Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy	
		9	Cpy Ncpy	Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy	
6	1	Icpy	Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		
		Incpy	RC	C	RC	C	RC	C	RC	C	RC	C	RC	C	RC	C	RC	C	RC	C	
		RC	RC	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	6	7	Cpy Ncpy	Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy	
		8	Cpy Ncpy	Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy	
		9	Cpy Ncpy	Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy		Cpy Ncpy	

TOTAL TALLIES: # Repeated Commands (RC) _____ # Child Negatives (Cn) _____

Initial Noncompliance (Incpy) _____ # Approvals (A) _____ # Commands (C) _____

Total Noncompliance (Ncpy) _____ # Parent Negatives (Pn) _____

APPENDIX D

FREE PLAY CODING FORM

Coding Pg. 1

Subject Number _____ Coder _____ Date Coded _____

Minute 1 started at _____ Min. _____ Sec. on Videotape

M	1	2	3	4	5
1	A A A A A Pn Pn Pn Pn Pn Cn Cn Cn Cn Cn				
	C R R Cpy	C R R Cpy	C R R Cpy	C R R Cpy	C R R Cpy
	R R R Ncpy	R R R Ncpy	R R R Ncpy	R R R Ncpy	R R R Ncpy
	R R R	R R R	R R R	R R R	R R R
2	A A A A A Pn Pn Pn Pn Pn Cn Cn Cn Cn Cn				
	C R R Cpy	C R R Cpy	C R R Cpy	C R R Cpy	C R R Cpy
	R R R Ncpy	R R R Ncpy	R R R Ncpy	R R R Ncpy	R R R Ncpy
	R R R	R R R	R R R	R R R	R R R
3	A A A A A Pn Pn Pn Pn Pn Cn Cn Cn Cn Cn				
	C R R Cpy	C R R Cpy	C R R Cpy	C R R Cpy	C R R Cpy
	R R R Ncpy	R R R Ncpy	R R R Ncpy	R R R Ncpy	R R R Ncpy
	R R R	R R R	R R R	R R R	R R R
4	A A A A A Pn Pn Pn Pn Pn Cn Cn Cn Cn Cn				
	C R R Cpy	C R R Cpy	C R R Cpy	C R R Cpy	C R R Cpy
	R R R Ncpy	R R R Ncpy	R R R Ncpy	R R R Ncpy	R R R Ncpy
	R R R	R R R	R R R	R R R	R R R
5	A A A A A Pn Pn Pn Pn Pn Cn Cn Cn Cn Cn				
	C R R Cpy	C R R Cpy	C R R Cpy	C R R Cpy	C R R Cpy
	R R R Ncpy	R R R Ncpy	R R R Ncpy	R R R Ncpy	R R R Ncpy
	R R R	R R R	R R R	R R R	R R R
6	A A A A A Pn Pn Pn Pn Pn Cn Cn Cn Cn Cn				
	C R R Cpy	C R R Cpy	C R R Cpy	C R R Cpy	C R R Cpy
	R R R Ncpy	R R R Ncpy	R R R Ncpy	R R R Ncpy	R R R Ncpy
	R R R	R R R	R R R	R R R	R R R

FREE PLAY CODING FORM

Coding Pg. 2

M	1	2	3	4	5
	A A A	A A	Pn Pn Pn Pn Pn	Cn Cn Cn Cn Cn	
7	C R R Cpy	C R R Cpy	C R R Cpy	C R R Cpy	C R R Cpy
	R R R Ncpy	R R R Ncpy	R R R Ncpy	R R R Ncpy	R R R Ncpy
	R R R	R R R	R R R	R R R	R R R
	A A A	A A	Pn Pn Pn Pn Pn	Cn Cn Cn Cn Cn	
8	C R R Cpy	C R R Cpy	C R R Cpy	C R R Cpy	C R R Cpy
	R R R Ncpy	R R R Ncpy	R R R Ncpy	R R R Ncpy	R R R Ncpy
	R R R	R R R	R R R	R R R	R R R
	A A A	A A	Pn Pn Pn Pn Pn	Cn Cn Cn Cn Cn	
9	C R R Cpy	C R R Cpy	C R R Cpy	C R R Cpy	C R R Cpy
	R R R Ncpy	R R R Ncpy	R R R Ncpy	R R R Ncpy	R R R Ncpy
	R R R	R R R	R R R	R R R	R R R
	A A A	A A	Pn Pn Pn Pn Pn	Cn Cn Cn Cn Cn	
10	C R R Cpy	C R R Cpy	C R R Cpy	C R R Cpy	C R R Cpy
	R R R Ncpy	R R R Ncpy	R R R Ncpy	R R R Ncpy	R R R Ncpy
	R R R	R R R	R R R	R R R	R R R

TOTAL TALLIES: # Repeated Commands (R) _____ # Child Negatives (Cn) _____

Approvals (A) _____ # Commands (C) _____ # Parent Negatives (Pn) _____

Total Noncompliance (Ncpy) _____

APPENDIX E

CHILD ATTENTION CODING FORM

Subject # _____ Session # _____ Coder _____ Date Coded _____

Interval 1 started at _____ Min. _____ Sec. on Videotape

Interval #:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Off Task															
Fidgeting															
Vocalizing															
Plays w/obj.															
Out of Seat															
Interval #:	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Off Task															
Fidgeting															
Vocalizing															
Plays w/obj.															
Out of Seat															
Interval #:	31	32	33	34	35	36	37	38	39	40	Total Occurrences				
Off Task											Off Task =				
Fidgeting											Fidgeting =				
Vocalizing											Vocalizing =				
Plays w/obj.											Plays w/obj =				
Out of Seat											Out of Seat =				

APPENDIX F

KBP Pg. 1 of 3

Knowledge of Behavioral Principles Subject Number _____

Session Number _____ Date _____

The following questions describe common situations faced by parents. There are also questions about general parenting strategies. Each question has four possible answers. Pick what you believe is the best answer for each question. Circle the letter of only one answer for each question. Be sure to answer each question even if you must guess.

- (1) Probably the most important idea to keep in mind when first changing a child's behavior is:
 - a. To use both reward and punishment.
 - b. To reward every time the desired behavior occurs.
 - c. To be flexible about whether or not you reward.
 - d. To be sure the child understands why you want the behavior to change.

- (2) A child begins to whine and cry when his parent explains why he can't go outside. How should the parent react?
 - a. Ask the child why going outside is so important to him.
 - b. Explain that it is a parent's right to make such decisions.
 - c. Explain again why he should not go outside.
 - d. Ignore the whining and crying.

- (3) If you are trying to teach a child to talk, you should first:
 - a. Reward the child after speaking a sentence.
 - b. Reward the child for saying a word.
 - c. Reward the child for any vocalization.
 - d. Punish the child if he did not speak.

- (4) Which of the following is most effective in getting a child to do homework?
 - a. "When you finish your homework, you can watch TV"
 - b. "You can watch this show on TV if you promise to do your homework when the show is over."
 - c. "If you don't do your homework tonight, you can't watch TV at all tomorrow."
 - d. Explain the importance of school work and the dangers of putting things off.

- (5) Three of the following responses refer to forms of punishment which are mild and effective. Which one is not?
- Ignoring the undesirable behavior.
 - Sending the child to a dull room for a few minutes.
 - Taking away something the child likes (such as dessert after supper).
 - Scolding.
- (6) Each time Mother starts to read Billy begins making a lot of noise which prevents her from enjoying her time. The best way for Mother to get Billy to be quiet while she reads is to:
- Severely reprimand him when this occurs.
 - Pay close attention and praise and hug him when he plays quietly while she is reading and ignore his noisy behavior.
 - Call him to her and carefully explain how important it is for her to have a quiet time for herself each time this occurs.
 - Tell him that he won't get a dessert after dinner if he continues.
- (7) Which of the following would NOT prevent time-out from working correctly? In other words, which is the only condition that will not hurt the effectiveness of time-out?
- The child enjoys watching TV while sitting in time-out.
 - The child enjoys playing with his brother or sister at home.
 - The child stops working on his homework when he has to go to time-out.
 - When the child has to go to time-out, there is no time left for chores.
- (8) Which of the following is the best command?
- "Will you please pick up your room?"
 - "This is the last time I'm going to ask you to help clean."
 - "Put all of your legos in the toy box."
 - "Pick up the legos."
- (9) Which of the following is NOT an important step in changing a child's behavior?
- Make certain the child feels ashamed for her misbehavior.
 - Decide on a particular behavior that you wish to change.
 - If necessary, break the selected behavior down into smaller steps.
 - Select a proper time and situation for measuring the behavior.

- (10) If you want your child to say "please" and "thank you" at the table, it is probably most important to:
- Reprimand him when she forgets to say them.
 - Explain why good manners are important.
 - Remember to compliment him when she remembers to say them.
 - Praise other members of the family when they use these words.
- (11) Which would be the best example of an appropriate way to praise Mary?
- Good girl, Mary.
 - I love you, Mary.
 - I like the way you helped me put the dishes away.
 - I'll tell your father how nice you were when he comes home.
- (12) A father tells a child she cannot have a candy she wants at the grocery store. The child begins to shout and cry. What is it best to do?
- Give her the candy right away so she'll stop crying.
 - Tell her that if she is quiet, she may have the candy.
 - Spank her.
 - Ignore her.
- (13) Which of the following is probably most important in helping a child behave in desirable ways?
- To teach him the importance of self-discipline.
 - To help him understand right and wrong.
 - Providing consistent consequences for his behavior.
 - Understanding his moods and feelings as a unique person.

Scoring Instructions: Parent receives 1-point for every correct answer.

Answer Key

- | | |
|------|-------|
| 1. B | 8. C |
| 2. D | 9. A |
| 3. C | 10. C |
| 4. A | 11. C |
| 5. D | 12. D |
| 6. B | 13. C |
| 7. B | |