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PERCEPTIONS OF FAMILY ENVIRONMENT OF BOYS WITH  
ATTENTION DEFICIT HYPERACTIVITY DISORDER  
AND THEIR MOTHERS

DISSERTATION

Presented to the Graduate Council of the  
University of North Texas in Partial  
Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

By

Lisa Daniels Costas, B.S., M.A.

Denton, Texas

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Children with Attention Deficit Hyperactivity Disorder (ADHD) experience a significant number of psychological symptoms and behavioral problems which negatively affect their interactions within their families. The purpose of the present study was to explore the perceptions of family environment of boys with ADHD and their mothers and compare them to those of nonreferred boys and their mothers. Maternal reports of emotional distress and perceptions of hyperactive behavior in the two groups of boys were also studied.

Thirty boys with ADHD and their mothers and thirty nonreferred boys and their mothers participated in the study. Mothers completed the SCL-90-R, the Conners' Parent Rating Scales, and the Cohesion, Expressiveness, and Conflict subscales of the Family Environment Scale. The boys completed the Cohesion, Expressiveness, and Conflict subscales of the Child Version of the Family Environment Scale.

Multivariate analyses of variance (MANOVA) and analyses of variance (ANOVA) on maternal emotional distress, perceptions of hyperactive behavior in the children, and perceptions of family environment showed no significant differences between the two groups of mothers on level of emotional distress. Mothers of children with ADHD reported significantly more hyperactive behavior in their children than mothers of nonreferred boys. They also perceived their families as less cohesive, less expressive, and more conflictual. Boys with ADHD did not differ from nonreferred boys in perceptions of family environment. However, mothers of boys with ADHD perceived their families as significantly more conflictual than their sons.

Results suggest that mothers of children with ADHD, contrary to previous findings, do not experience significant levels of psychological distress or psychopathology. Families of children with ADHD tend to experience more levels of conflict than families of nonreferred children. This appears related to the presence of ADHD. Children with ADHD tend to deny the levels of conflict present in their families. Possible explanations are discussed as well as recommendations for interventions and future research.

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## CHAPTER I

### INTRODUCTION

Attention Deficit Hyperactivity Disorder (ADHD) is one of the most studied and most prevalent disorders with origins in childhood. ADHD is the most common cause for referral of children to mental health facilities in the United States (Barkley, 1990). ADHD symptoms are noticeable in early childhood. Barkley (1988) described ADHD symptoms as age-inappropriate levels of inattention, overactivity, impulsivity, and self-regulation of behavior. Display of symptoms vary significantly according to environmental conditions and task demands. Children with ADHD seem to have most difficulty in complex situations that demand restriction of behavior, planning, and organization such as structured tasks in school or home. In addition, children with ADHD are faced with other associated problems. They are more likely to have academic achievement and performance problems, learning disabilities, speech and language development problems, memory and problem-solving strategies difficulties, minor health and physical problems, sleep problems, emotional and behavioral difficulties, and problems with peer and familial relationships (Barkley, 1990).

The significant number of psychological symptoms and behavioral problems children with ADHD experience impact their transactions with the environment. The problems associated with ADHD appear to negatively influence the interactions of children diagnosed with this disorder in different settings. One of the major environments affected is the home. The symptoms and problems associated with this disorder appear to be significantly related to presence of parental psychopathology (e.g. depression), parenting distress, marital difficulties, and negative parent-child interactions. As a result, family functioning and the perceptions of family life may be negatively affected in families of children with ADHD. However, there is limited research on the effects of ADHD on the family environment. Yet, the family environment is considered to play a crucial role in the developmental outcome of the symptoms of ADHD in these children and in how they will adjust and cope. This study focused on the perceptions children with ADHD and their mothers have of their family relationships in order to explore how ADHD influences family life.

### Description

ADHD is considered to be a chronic disorder. Even though maturation appears to improve some deficits, symptoms can continue and prevail throughout adulthood. Barkley (1990) described three primary symptoms of ADHD. These symptoms are inattention, impulsivity, and overactivity.



Children with ADHD display these symptoms to a degree that is inappropriate for their age or developmental level.

Inattention observed in children with ADHD can be defined as a deficit in sustaining attention, especially in situations which require attending to repetitive tasks. Such tasks include situations such as school work, completion of chores, or homework (Barkley, 1990). Even in free play or less structured situations, children with ADHD display higher levels of inattention compared to children without ADHD. Research, however, has been unable to establish if the inattention observed in children with ADHD reflects primary deficits in attention or a secondary problem stemming from behavioral disinhibition (Barkley, 1990). Barkley believes that behavioral disinhibition is the primary symptom of ADHD rather than inattention.

Barkley described behavioral disinhibition in children with ADHD as a deficiency in their ability to inhibit behavior in response to situational demands. These children are more impulsive and quick to react to situations when compared to children without ADHD. Usually, these impulsive responses lead to errors and/or increased risk taking behaviors which often disregard consequences. According to Barkley, others may perceive this impulsivity as irresponsible, rude, immature, and/or lazy. These impulsive behaviors also lead others to be are critical, punishing, or

rejecting of children with ADHD which in turn leads to strained interpersonal relationships for the child.

Hyperactivity has been described as excessive or developmentally inappropriate levels of motor and vocal activity observed in children with ADHD (Barkley, 1990). Barkley described overactive behaviors commonly observed in ADHD children as restlessness, fidgeting, and gross body movements that are unnecessary. Research studies have consistently documented overactive behaviors in children with ADHD when compared to nonreferred children. Studies have not been able to establish with certainty that overactivity in children with ADHD is different from the overactivity observed in other children who are clinic-referred (Barkley, 1990).

Manifestation of symptoms of ADHD vary according to setting, caregivers (e.g. parent versus teacher), and task demands. This makes diagnosis of ADHD difficult, especially if consensus among informants of symptoms is required. Usually, children with ADHD are first identified in the school setting because the nature of the tasks that children are required to perform create difficulties for the child with ADHD. These tasks require planning ahead, organizing, and exerting control over one's behavior. These are the very areas with which the child with ADHD struggles. Therefore, the child with ADHD will tend to perform more poorly when faced with these types of tasks.

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In a series of longitudinal studies, Barkley (1990) found that even though many children with ADHD appear to adjust to their symptoms and to develop strategies that allow them to adjust to adulthood, others are at high risk for significant problems during adolescence with continued poor academic performance, antisocial conduct, substance abuse, and criminal behaviors. Barkley also found that children with milder symptoms of ADHD, high intelligence, well adjusted parents, and more stable family environment seem to have a better prognosis.

#### Incidence

The incidence of ADHD is a matter of debate in the literature. There is some consensus that approximately 3 to 5% of children have ADHD, but this range varies according to how ADHD is defined and what populations and environmental characteristics are targeted for research (Barkley, 1990). Estimates of ADHD incidence reported in the literature range from 1 to 20%. Because children, in general, can display many of the behaviors observed in children with ADHD, diagnosis of the condition is difficult. Barkley estimated that, overall, 5 to 6% of children between the ages of 4 and 16 years of age are likely to be diagnosed with ADHD.

Prevalence rates for ADHD can also vary with the sex of children studied. A review of the literature suggests that boys are more often diagnosed with ADHD than girls. Studies have reported ratios of boys with ADHD to girls with ADHD

between 2:1 to 10:1 (Barkley, 1990). In a study of a nonclinical sample of children with ADHD, boys were also found to have ADHD three times more than girls (Barkley, 1990). In studies of clinical samples, boys referred for ADHD are significantly more represented than girls. Barkley attributed this finding to referral bias since boys with ADHD tend to display more aggression and antisocial behaviors which are usually behaviors leading to clinical referrals. Girls, on the other hand, seem to internalize behaviors and show less behavioral problems. Also, they appear to have less problems with conduct than boys. The author suggests that there may be a sex-linked mechanism in the expression of ADHD. Nevertheless, Barkley pointed out that in studies with clinical samples, few sex differences in children with ADHD are found.

#### Parental Psychopathology

In order to understand how family functioning in families of children with ADHD may be influenced by the presence of symptoms and problems associated with this disorder, it would be important to examine the research literature on some of the variables associated with family functioning in families of children with ADHD, such as presence of parental psychopathology.

In a review of the literature, Fischer (1990) found empirical evidence which indicated a relationship between ADHD and parental psychopathology. Several studies have

found higher rates of depression in mothers of hyperactive children compared to rates observed in mothers of nondisabled children (Befera & Barkley, 1985; Cunningham, Benness, & Siegel, 1988; Mash & Johnston, 1983a). Other studies which have included fathers and mothers in their samples have found significantly more symptoms of depression in these parents compared to normal parents (Brown, Borden, Clingerman, & Jenkins, 1986; Brown & Pacini, 1989). Brown and Pacini also found these depressive symptoms to be associated to perceptions of parenting deficiencies and problems in family functioning.

Some findings of higher rates of sociopathy, alcoholism, hysteria, and parental childhood history of hyperactivity in parents of hyperactive children have been the center of debate (Fischer, 1990). Cantwell (1972) found higher rates of sociopathy among fathers of hyperactive children compared to normal fathers. Mothers of children with ADHD were found to have higher rates of hysteria and alcoholism. However, data in this area is conflicting and inconclusive. Methodological problems with these studies center on the variety of criteria used to assess psychopathology and on the inclusion of children with ADHD diagnosed also with conduct disorders in samples evaluated. Studies which have differentiated between conduct disordered children and hyperactive children have not found a relationship between ADHD and parental psychopathology

(Fischer, 1990; Schachar & Wachsmuth, 1990). Schachar and Wachsmuth (1990) found more rates of parental psychopathology in parents of children with ADHD and conduct disorders than in parents of ADHD, emotionally disturbed, and normal children. The authors concluded that more severe parental psychopathology may be related to the existence of other disorders in children with ADHD, such as conduct disorders. Additionally, Fischer (1990) pointed out that the evidence of psychopathology in parents of children with ADHD obtained from adoption studies is also inconclusive because of major methodological problems such as lack of interviews with biological parents. Therefore, conclusive information about parental psychopathology, except for presence of depressive symptoms, is lacking presently.

There is evidence, however, that ADHD is also present in the biological parents of children with this disorder. Barkley (1990) reported a prevalence rate between 15 to 20% in mothers of children with ADHD and 20 to 30% in fathers. Barkley also reported a prevalence rate of 26% in siblings of these children.

#### Parenting Distress

Parents of children with ADHD also report significant distress compared to parents of normal children (Fischer, 1990). Mash and Johnston (1983a) found significantly high levels of stress in mothers and lower parenting self-esteem in both fathers and mothers of hyperactive children. These

symptoms of distress were associated with perceptions of being less competent and effective as parents. Distress was also associated with negative perceptions of children with ADHD such as viewing the child as more problematic, less compliant, and more inattentive.

Breen and Barkley (1988) reported that parents of children with ADHD, especially mothers, experience greater parenting stress when compared to parents of nondisabled children (Barkley, 1990). Mothers of young children with ADHD appear to experience significantly more stress than mothers of older children with ADHD (Mash & Johnston, 1983a). Mash and Johnston (in press) found the sources of increased stress levels in mothers of children with ADHD to be related to the characteristics and disruptiveness of these children rather than to maternal characteristics (Barkley, 1990).

In a related study, Mash and Johnston (1983b) also found high levels of distress in mothers of children with ADHD compared to mothers of normal children. Distress levels were related to the presence of significantly more negative interactions between children with ADHD and their siblings.

Anastopoulos, Guevremont, Shelton, and DuPaul (1992) explored parenting stress in families of children with ADHD through multiple regression analyses. The authors examined the contribution of several parent, child, and family environment variables to parenting stress in these families.

Their sample was obtained from clinic-referred children with ADHD and their mothers. Significantly more boys were represented in the study. The child variables included in the study were severity of ADHD, aggressive behavior, peer relationships, health status, medication status, special education status, and demographics. Parent variables included maternal health, depression, and overall psychopathology measured by the Symptom Checklist-90-Revised (SCL-90-R). Maternal demographics were also measured. Family environment variables included were demographics, socioeconomic status, psychosocial stress, and problems exhibited by others in the family.

Results indicated that extremely high parenting stress levels were present in the sample. Three child variables contributed to 43% of variance in parenting stress scores. These variables were aggression, severity of ADHD symptoms, and health status. Two parent variables accounted for 13% of the variance in parenting stress. These variables were overall psychopathology and maternal health (somatization). Family environment variables accounted only for 4% of the variance. Furthermore, the overall severity of ADHD symptoms seems to be one of the most significant predictors of parenting stress. Also, mothers of children with the sole diagnosis of ADHD experienced significantly less parenting stress than mothers of children with a dual diagnosis such as ADHD and Oppositional Disorder. The



authors concluded that child and parent variables, rather than family environment, are more related to parenting stress in families of children with ADHD.

More recently, Baker (1994) explored differences in parenting stress in mothers and fathers of children with ADHD and found that children's behaviors have a significant influence on parenting stress in these families. No differences were found between mothers and fathers on their reports of parenting stress and their reports of their children's behaviors. Fathers experienced similar levels of parenting stress as mothers, but felt less attached to their children. Mothers were more likely to perceive their children's characteristics as more stressful. Results also showed that children's total problems, fewer years of marriage, and a higher socioeconomic level contributed significantly to parenting stress in these families. Parent gender only contributed to 6% of the variance.

Fischer (1990) suggested that the distress level reported by parents of children with ADHD may be related to parenting a child with a chronic disorder. The demands of parenting a child with attentional difficulties may far exceed the resources available to the average parent and may affect other major aspects of family functioning such as marital functioning and parent-child interactions.

### Marital Discord

Behavioral problems in children with ADHD, especially boys, have been associated with presence of marital discord (Fischer, 1990). Even though no direction of causality between marital discord and child deviant behaviors has been established in the literature, there is evidence which suggests emergence of marital problems in families of children with ADHD after diagnosis of attentional problems has been established. Mothers of hyperactive children report more marital problems (Befera & Barkley, 1985). Several authors have suggested that evidence of the effect of deviant child behavior on marital functioning in families of children with ADHD is observed in the significantly high levels of divorce and separation documented in these families (Fischer, 1990).

Barkley, Fischer, Edelbrock, and Smallis (1990) found in an 8-year longitudinal study, that the family status of hyperactive children changed significantly (Barkley, 1990). The authors reported divorce rates three times higher in these families than in families with children without hyperactivity. Research findings in this area suggest a causal relationship between the child's behavior problems and marital problems in families of children with ADHD.

### Parent-child Interactions

Parental depression and stress, parenting distress, and marital discord seem to negatively affect parent-child

relationships and functioning in families of children with ADHD. Parent-child relationships in families of these children are characterized by an increase in negative interactions. Children with ADHD are less compliant with parental commands, less attentive, and more demanding of attention and assistance (Barkley & Cunningham, 1979). The significant level of noncompliance in children with ADHD leads to significant parental distress (Barkley, Karlsson, & Pollard, 1985).

Several studies have found more negative interactions between children with ADHD and their mothers during tasks which were structured and required more parental commands (Befera & Barkley, 1985; Mash & Johnston, 1982). Fischer (1990) found in her review of the research completed by Barkley on interactional patterns between mothers and children with ADHD that during structured tasks, children with ADHD were more oppositional, less compliant, and more inattentive to parental commands. Mothers tended to respond to such behaviors with further attempts to control and direct, more negative interactions, and less responsiveness to the children's approaches. During free play or unstructured situations, no differences were observed in parent-child interactions between mothers of children with ADHD and mothers of normal children.

Negative parent-child interactions were observed also between children with ADHD and their fathers. However, these

children tended to react more negatively to maternal commands (Tallmadge & Barkley, 1983). The level of conflict in parent-child interactions was found to be higher between young children with ADHD and their mothers (Mash & Johnston, 1982). Barkley (1988) also found that noncompliance is more present among adolescents with ADHD compared to normal adolescents. This suggested that noncompliance continues to be a factor in a parent-child interactions for children with ADHD and their parents during a significant portion of the child's life.

The negative interactions observed between children with ADHD have prompted several researchers to suggest a systemic or reciprocal model which suggests that the parents' behavior can be both a consequence and an antecedent of the child's behavior (Brown & Pacini, 1989; Cunningham, Benness, & Siegel, 1988). The child's behaviors, in turn, are also both contingent upon and an antecedent to parental behavior. Therefore, there is constant shift of causation in the parent-child interactions with parental behavior influencing negative responses in some environments and situations and the child influencing parental responses in other situations. Therefore, clear causation of negative interactions between these children and their parents may not be established and may vary according to environmental circumstances such as task conditions.

Research efforts to explore the degree to which ADHD significantly influences negative parent-child interactions have centered on examination of the effects of stimulant medication use in parent-child interactions. Results of these studies suggested that interactions between children with ADHD and their parents improved when children took stimulant medication for ADHD symptoms (Fischer, 1990; Whalen & Henker, 1991). As a result of medication use, these children showed more compliance and attention during tasks. Their mothers, in turn, showed less efforts at controlling and more nondirective interactions with the children (Barkley et al., 1985; Cunningham & Barkley, 1978). These results suggested that parents' negative interactions may be the result of problems associated with ADHD, such as noncompliance, rather than problems residing solely with the parent.

#### Family Functioning

If parent-child interactions are of a negative nature in families of children with ADHD, a possible consequence of this conflict is disruption of family functioning and, perhaps, more negative perceptions among family members about family life. Even though it seems likely that family functioning may be altered in families of children with ADHD as a result of all the factors previously reviewed, few studies have explored family functioning in this group. Fischer (1990) suggested that because there is evidence in

the literature that problems within the family environment are related to adjustment and functioning in family members, more attention needs to be given to studying problems of functioning in families of children with ADHD. Surprisingly, however, there has been little research in this area, and available studies have raised more questions than they have answered.

Recent studies have investigated family functioning in families of children with ADHD. Cunningham et al. (1988) investigated extended family relationships, family functioning, parental depression, and perceptions of child behaviors in parents with ADHD children and parents with nondisabled children. Results indicated that mothers of children with ADHD perceived them as more difficult, reported more symptoms of depression, and viewed their extended families as less helpful. Their level of depression was predicted by child behavior and family functioning. Fathers of children with ADHD reported more symptoms of depression compared to fathers in the control group but their depression appeared related to family functioning only. Families of children with ADHD had less contact with their extended families, but were not different in family functioning compared to families with normal children. The authors concluded that ADHD may be more related to parental stress rather than to disruption of family functioning.

In contrast, Brown and Pacini (1989) studied parental perceptions of family functioning, depression, and marital status in families of boys with ADHD, families with learning disabled boys, and families with nondisabled boys. Results indicated that parents of boys with ADHD showed more symptoms of depression. These depressed parents perceived more negative problems in family functioning such as lack of support, increased stress, lack of cohesion, and increased conflict. Parents of children with ADHD, in general, tended to view family relationships as more disturbed but not as conflictual. In addition, these families had higher rates of divorce or separation than the two other comparison groups. Mothers in these families reported more depression than fathers. This suggested that perhaps the single parent of a child with ADHD may experience additional distress and problems associated with disruption in family status.

Lewis (1992) examined family functioning in parents of boys with ADHD. The author compared these parents' reports about their families' adaptability and cohesion to normative data. She also compared families based on three diagnostic categories: ADD (Attention Deficit Disorder without Hyperactivity), ADHD, ADHD and aggression. Results indicated that there were no significant differences in family functioning between parents of children with ADD and families in the normative sample of the measure utilized to evaluate family functioning. When families were grouped by

diagnostic category, the author found that 65% of parents of boys with ADD reported higher levels of family functioning compared to 28% of parents of boys with ADHD and 31% of parents of boys with ADHD and aggression.

Even though there is some agreement that children with ADHD and their families experience a number of problems such as increased distress, parental depression, and interpersonal problems, there is limited information and lack of consensus regarding the relationship between ADHD and family functioning. In addition, the perceptions children with ADHD have of their family environment have not been evaluated in the literature. It would seem important to assess how these children view their families, how these perceptions match those of their parents, and how they compare to perceptions of nonreferred children.

#### Purpose

The purpose of this study was to expand the research on ADHD and its impact on family functioning by exploring the interpersonal family environment of families of children with ADHD. In addition, this study sought to explore further the findings in the literature related to the presence of emotional distress in parents of children with ADHD, to evaluate how these symptoms are related to family functioning, and to document differences between this group of parents and parents of nonreferred children.



### Hypotheses

Hypothesis 1. Mothers of boys with ADHD would report more present emotional distress than mothers of nonreferred boys.

Hypothesis 2. Mothers of boys with ADHD would perceive their sons as more hyperactive than mothers of nonreferred boys.

Hypothesis 3. Mothers of boys with ADHD would have more negative perceptions of their family environments than mothers of nonreferred boys.

Hypothesis 4. Boys with ADHD would have more negative perceptions of their family environment than nonreferred boys.

Hypothesis 5. There would not be a significant difference between the perceptions of family environment of boys with ADHD and their mothers.

## CHAPTER II

### METHOD

#### Subjects

Two groups of subjects participated in the study. The first group included thirty boys diagnosed with ADHD and their mothers. The second group included thirty boys without any reported disabilities and their mothers. All participants in the study were volunteers. Only boys were included in the study. Several studies have documented differences in the way boys and girls with ADHD manifest their symptoms. Therefore, in order to avoid introduction of confounding variables related to gender differences, only boys were selected as participants.

Only mothers were included in the study. Differences between mothers and fathers on how they perceive their children with ADHD have been documented in the literature. In order to avoid introducing confounding variables related to parental differences in perceptions and gender, this study focused only on maternal perceptions.

Boys with ADHD and their mothers were recruited through referrals from parent training groups conducted through the ADHD Clinic at the University of North Texas in Denton, Texas, Children and Adults with Attention Deficit Disorders

(CHADD) support groups in a metropolitan area of west-central Florida, and public schools located in rural and metropolitan areas in north Texas and west-central Florida. Criteria for inclusion was a diagnosis of ADHD, based on Diagnostic and Statistical Manual of Mental Disorders (Third Edition-Revised) (DSM-III-R) criteria, by a physician or psychologist. Boys with other handicapping conditions such as psychosis, neurological problems, and/or mental retardation were excluded from the study. Boys with additional psychiatric diagnoses, such as Oppositional Disorder or learning disabilities, were also excluded from the study. All boys included in the ADHD group had already been diagnosed with ADHD when they participated in the study.

Nonreferred boys and their mothers were recruited from public schools in rural and metropolitan areas of north Texas and west-central Florida. Criteria for inclusion in this group was based on absence of behavioral, psychological, or learning problems as reported by their mothers and school counselors.

Dependent  $t$  tests were completed for several demographic characteristics of the sample. No significant differences were found between the two groups on mothers' age, children's age, number of children living at home, and number residing in the household. A 2 x 3 Chi Square was completed on the type of living arrangements for children in

the two groups. No significant differences were found between the two groups in this area.

Table 1 contains the demographic characteristics of the two groups of mothers participating in the study. Mothers of boys with ADHD were between the ages of 28 to 51. The mean age for this group was 37.2 years. Most subjects were married (70%). Twenty-three percent of the mothers in this group were divorced. The ethnic composition of this group consisted of 93.3% Caucasian and 6.7% African American. The average Hollingshead Index for this group was 44.99. This index indicated that this group's socioeconomic level falls in the middle class socioeconomic range (Hollingshead, 1975). Mothers of nonreferred boys were between the ages of 27 and 46 years. The mean age for this group was 36.7 years. Ninety percent of the sample was married. The ethnic composition of the sample was 96.7% Caucasian and 3.3% Hispanic. The average Hollingshead Index for this group was 48.25. This index indicated that the nonreferred group sample's socioeconomic level also falls in the middle class socioeconomic range (Hollingshead, 1975).

Table 2 contains demographic information for the two groups of boys who participated in the study. Boys with ADHD were between the ages of 6 and 12 years. The mean age for this group was 9.13 years. Most boys in this group were receiving medication (86.7%). The majority of the boys lived with both parents (66.7%). Twenty six percent of the sample

Table 1

Demographic Information for Mothers in the ADHD and  
Nonreferred Groups

Variable	Group	
	Mothers/ADHD <u>N</u> = 30	Mothers/Nonreferred <u>N</u> = 30
Age		
M	37.2	36.7
SD	5.2	5.2
Marital Status		
Married	70.0 %	90.0 %
Divorced	23.3 %	6.7 %
Other	6.7 %	3.3 %
Number of Children at Home		
M	1.9	2.2
SD	.9	.7
Number in Household		
M	3.8	4.2
SD	1.1	.8
Race		
Caucasian	93.3 %	96.7 %
African American	6.7 %	0.0 %
Hispanic	0.0 %	3.3 %

(table continues)

Variable	Group	
	Mothers/ADHD <u>N</u> = 30	Mothers/Nonreferred <u>N</u> = 30
Hollingshead Index		
M	44.99	48.55
SD	11.97	12.73

Table 2

Demographic Information for Boys in the ADHD and Nonreferred Groups

Variable	Group	
	Boys/ADHD <u>N</u> = 30	Boys/Nonreferred <u>N</u> = 30
Age		
M	9.13	8.93
SD	1.70	1.28
Medication		
Yes	86.70 %	0.00 %
No	13.30 %	100.00 %
Resides with		
Parents	66.70 %	90.00 %
Mother	26.70 %	10.00 %
Other	6.70 %	00.00 %

lived with their mother only. Boys in the nonreferred group were between the ages of 7 and 12 years. The mean age for this group was 8.93 years. None of the boys was receiving any medication at the time of the study. Ninety percent of the subjects lived with both parents. Ten percent of the subjects lived with their mother only.

### Materials

The Global Severity Index (GSI) of the Symptom Checklist-90-Revised (SCL-90-R; Derogatis, 1983) was used to assess present level of maternal distress. The SCL-90-R is a 90-item self-report symptom inventory that assesses psychological symptoms experienced by individuals between ages 13 and adult. The inventory yields scores for nine primary symptom dimensions and three global indices of distress. The symptom dimensions include Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism. The three global indices are the Global Severity Index (GSI), Positive Symptom Distress Index (PDSI), and Positive Symptom Total (PST). The GSI provides the best overall indicator of an individual's present level of perceived stress. It conveys information about distress level based on number of symptoms experienced and their intensity.

Individuals completing the SCL-90-R are asked to rate each of 90 items on a 5-point scale of distress (Derogatis,

1983). This scale ranges from "not at all" to "extremely." Individuals are asked to report on symptoms experienced the previous week. Raw scores for each symptom dimension and global indices are transformed into  $T$  scores utilizing normative data available for male or female adolescents and adults and based on nonpatient, inpatient, and outpatient status. A score of  $T = 63$  on the GSI is considered an indicator of significant symptoms of distress (Derogatis, 1983).

Normative data for the SCL-90-R was obtained from four major groups: 1) individuals in outpatient psychiatric treatment ( $n = 1,002$ ), 2) nonpatients ( $n = 974$ ), 3) individuals in inpatient psychiatric units ( $n = 310$ ), and 4) nonpatient adolescents ( $n = 806$ ). For this study,  $T$  scores were obtained from the normative data of nonpatients. Normative data for the nonpatient group was collected from a randomly selected sample of 493 males and 480 females of an ethnically diverse county of an eastern state in the United States.

Measures of internal consistency on the 9 symptom dimensions have shown satisfactory coefficients with a range of .77 (Psychoticism) to .90 (Depression) (Derogatis, 1983; Tennen, Affleck, & Herzberger, 1985). The measure also has appropriate levels of test-retest reliability coefficients for a one week interval with coefficients ranging between .78 (Hostility) and .90 (Phobic Anxiety) in an outpatient



population (Derogatis, 1983; Payne, 1985; Tennen et al., 1985). Measures of test-retest reliability coefficients for the three global indexes were .90 (GSI), .87 (PSDI), and .80 (PST) (Tennen et al., 1985). Measures of inter-rater reliability using the SCL-90 Analogue yielded reliability coefficients ranging from .78 (Psychoticism) to .94 (Somatization). The SCL-90-R has good test-retest reliability coefficients for nonpatients and psychiatric patients (Tennen et al., 1985). The measure has also high internal consistency and stability (Payne, 1985; Tennen et al., 1985).

The SCL-90-R has been used in a significant number of studies. Studies evaluating the effects of some psychological stressors such as disasters, cancer, rape, chronic pain, and anorexia nervosa have found significant relationships between these stressors and symptoms evaluated by the SCL-90-R (Payne, 1985). In addition, a significant number of symptoms on the SCL-90-R have been found to be correlated with other psychiatric screening scales. The Depression factor score on the SCL-90-R was found to be significantly correlated with other measures of depression like the Beck Depression Inventory (Payne, 1985). Derogatis (1983) reported significant correlations between the symptoms 209 patients reported on the SCL-90-R and the symptoms they reported on the MMPI.

The Hyperactivity Index of the Conners' Parent Rating Scale (CPRS-48; Conners, 1990) was used to evaluate maternal perceptions of hyperactivity in boys with ADHD and nonreferred boys. The CPRS-48 is a 48-item parent rating scale commonly used to evaluate problem behaviors in children. This scale yields scores for five factor scales: Learning Problems, Conduct Problems, Psychosomatic, Anxiety, and Impulsive-Hyperactive. The CPRS-48 also includes a 10-item Hyperactivity Index which provides a measure of behaviors which are usually indicative of a diagnosis of hyperactivity. The CPRS-48 is completed by parents of children between the ages of 3 and 17 years. Normative data is available according to the sex and age of the target child.

Parents or caregivers are asked to rate their children's behaviors on one of four levels for each item. Parents are asked to base their ratings on how they think the child is bothered by problems presently. The four levels of ratings range from "not at all" to "very much". Raw scores for each dimension are transformed into T scores. Scores which are equal or greater than two standard deviations above the mean ( $T = 50$ ) are usually indicative of psychopathology. Barkley (1988) suggested a score of two standard deviations above the average score on the Hyperactivity Index to establish ADHD. Conners (1990) also recommended a raw score of 15 on the Hyperactivity Index or

two standard deviations above the mean as criteria for identifying hyperactive children.

This scale has adequate norms, validity, and reliability data (Martens, 1992; Sattler, 1988). Test-retest reliability indexes for the CPRS-48 scales range from .91 to .33 with 2 weeks to 1 year intervals (Martens, 1992). Test-retest reliabilities for the Conners' Hyperactivity Index range from .70 to .91 (Goyette, Conners, & Ulrich, 1978). Inter-rater reliabilities between mothers and fathers on the CPRS-48 range from .46 (Psychosomatic factor) to .57 (Conduct Problem factor) with a mean of .51 (Conners, 1990). Ratings on the Hyperactivity Index showed a .55 correlation. The internal consistency of the CPRS-48 is adequate (Martens, 1992). Alpha coefficients of internal consistency range from .61 to .95. An internal consistency reliability index of .92 was reported for the Hyperactivity Index (Conners, 1990).

Goyette et al. (1978) analyzed the factors of the CPRS-48 and found that the five dimensions of the measure are distinct and separate. The authors reported coefficients of congruence for the five factors: .70 for Impulsive-Hyperactive, .90 for Anxiety, .91 for Psychosomatic, .94 for Conduct Problem, and .63 for Learning Problems. The Hyperactivity Index correlated highly with the Conduct Problem, Learning Problems, and Impulsive-Hyperactive factors. An analysis of the Hyperactivity Index showed two

factors: attentional deficits/hyperactivity and excessive affect.

Martens (1992) reported substantial validity evidence for the Conners' Rating Scales. The Conners' Rating Scales have shown sensitivity to changes in children's behavior as a result of medication use. The scales correlate significantly with other rating scales, direct observations of behaviors, and peer ratings. They can also discriminate between various diagnostic categories and show correlation to other measures of childhood psychopathology.

The Relationship dimension of the Family Environment Scale (FES: Moos & Moos, 1986) was used to assess maternal perceptions of family environment. The FES is one of the most widely used measures of family social climate. It is a 90-item self-report measure with a true-false format. It evaluates how family members perceive the social environment of the family unit. The FES can be completed by family members aged 11 to adult. It consists of 10 subscales which assess three major dimensions of the family environment: Relationship, Personal Growth, and System Maintenance. Raw scores for each subscale are transformed into standard scores. Standard scores are based on a normative sample of nondistressed families.

The Relationship dimension is composed of three subscales: Cohesion, Expressiveness, and Conflict. The Cohesion subscale assesses the degree of commitment and

support among family members. The Expressiveness subscale evaluates the degree to which family members are encouraged to express feelings and behave in an open manner. The Conflict subscale evaluates the amount of anger, conflict, and aggression family members express openly among each other.

The Personal Growth Dimension is composed of five subscales: Independence, Achievement Orientation, Intellectual-Cultural Orientation, Active-Recreational Orientation, and Moral-Religious Orientation. This dimension evaluates the degree to which family members are assertive and self-sufficient; the degree to which activities are perceived in a framework of competition or achievement; the level of interest in political, social, and cultural activities; the level of participation in social and leisure activities, and how important are ethical and religious issues for family members.

The System Maintenance dimension includes two subscales: Organization and Control. The Organization subscale measures the degree to which organization and structure in planning family activities and responsibilities is important. The Control subscale evaluates to which set rules and procedures are used in the family.

Three forms of the FES are available: Real Form, Ideal Form, and Expectations Form. For this study, the Real Form, which evaluates present perceptions of the family

environment, was used. Normative data is only available for the Real form of the FES.

Normative data for the FES subscales was obtained from 1,125 nondistressed families and 500 distressed families. The sample of nondistressed families included families from different parts of the country. Various ages, generations, ethnic minorities, and types of families were represented. A sample of 294 families was also randomly drawn from the San Francisco area based on census records. The distressed families sample was obtained from a psychiatric-oriented family clinic and a correctional facility. Other families included in this group had members who were alcohol abusers, psychiatric patients, and children or adolescents in crises.

Because the normative data for the FES is based on the average scores of all family members represented in the sample, this may limit their usefulness when comparisons of individual family members' scores are needed. In addition, the FES does not provide a breakdown of all the subgroups represented in the normative data. Therefore, comparisons of different families (e.g., single-parent families) to the norms may not be completely accurate (Busch-Rossnagel, 1985; Lambert, 1985).

The FES has good internal psychometric properties (Busch-Rossnagel, 1985; Carlson, 1990; Lambert, 1985). Internal consistency reliability coefficients (Cronbach's alpha coefficients) for the 10 subscales ranged from .61 to

.78. Test-retest reliability coefficients after an 8-week period ranged from .68 to .86. Stability coefficients after 4 and 12 months ranged from .52 to .91 showing that the FES results are fairly stable over time (Caldwell, 1985).

The FES has adequate face validity and research based comparative data (Caldwell, 1985; Carlson, 1990). Research studies on the FES' construct validity have found a positive relationship between the Cohesion subscale and measures of perceived family support and adjustment (Moos & Moos, 1986). The Expressiveness and Conflict subscales were also related to an adjustment measure and to low family conflict. Also, high scores on a measure of family routines were related to high Cohesion, Organization, Control subscale scores and low Conflict subscale scores (Moos & Moos, 1986). The authors also reported that measures of religious participation were highly related to the Moral-Religious subscale, family activities were related to the Recreational Orientation subscale, and family arguments were related to the Conflict subscale.

Several studies have found the FES dimensions to be related to external criteria. The FES subscales were related to aspects of the family environment such as adaptation to pregnancy and parenthood, children's adjustment to parental divorce, parental adjustment to chronic illness in children, adjustment to stressors in the family, marital adjustment, degree of satisfaction with family life, and treatment

outcome for alcoholism, depression, and other psychiatric conditions (Moos & Moos, 1986).

Factor analytic studies have varied in the number of factors found within the structure of the FES. Most studies in this area have found two major factors: 1) Cohesion versus Conflict (Relationship) and 2) Organization and Control (System Maintenance) (Boake & Salmon, 1983; Fowler, 1982). Oliver, May, and Handal (1988) obtained similar results in their analysis of FES factors. The authors also identified a third factor they labeled Activities. The Relationship factor consists of high subscale loadings of Cohesion, Expressiveness, Conflict, and Intellectual-Cultural Orientation. The System Maintenance factor consisted of high loadings on subscales Organization and Control. The Activities factor included high loadings on subscales of the Personal Growth dimension and a moderately low loading on the Cohesion subscale. Kronenberger and Thompson (1990) found three factors on the FES which they referred to as Supportive, Conflicted, and Controlling factors. The authors equated the Conflicted factor to the Relationship factor reported in previous studies and the Controlling factor to the System Maintenance factor also reported previously. The Supportive factor seemed related to social support and mutual interest. It included high loadings on subscales Cohesion, Expressiveness, and most of the Personal Growth subscales.



The Interpersonal Relationship dimension of the Children's Version of the Family Environment Scale (CVFES: Pino, Simons, & Slawinowski, 1984) was used to assess the children's perceptions of their family environment. The CVFES evaluates the perceptions of family social environment in children between the ages of 5 to 12 years. The CVFES is a self-report, 30-item scale with a pictorial, multiple choice format. For each test item, children are presented with three cartoon-like pictures and asked to choose one picture that looks like their family most of the time. Each picture depicts a family with a mother, father, son, and daughter. Instructions to subjects acknowledge that their families may be different than the one portrayed in the items. Children are asked to pretend that the pictures represent their family if their family composition is different from the one depicted in the pictures. Raw scores for each subscale are converted into standard scores.

The CVFES was developed as a downward extension of the FES (Carlson, 1990). The CVFES was designed to be conceptually equivalent to the FES and has similar dimensions and subscales. Like the FES, the CVFES has three major dimensions: Interpersonal Relationships, Personal Growth, and System Maintenance. The subscales for each dimension are the same as the ones contained in the FES. The Interpersonal Relationship dimension used in this study

contains three subscales that measure Cohesion, Expressiveness, and Conflict among family members.

Even though the CVFES is a pictorial test, some of its items include written captions which require subjects to have a third grade reading level (Busch-Rossnagel, 1989). Children who can not read require individual administrations of the test. Busch-Rossnagel pointed out that some of the CVFES items show unclear facial expressions on the family members depicted. She believed this introduced visual perception difficulties for subjects. In order to facilitate understanding of the pictorial items, the format of the CVFES was modified for this study by including written descriptions for items that did not contain written captions. In addition, for group administrations of the CVFES, items were presented in transparencies.

Limited data is available presently on the psychometric properties of the CVFES (Busch-Rossnagel, 1989; Carlson, 1990; Pino et al., 1984). Normative data for the CVFES were collected after administering the measure to 158 children in grades first through sixth attending private schools in Buffalo, New York. The children were from low to middle socioeconomic groups. The sample contained the same number of boys and girls. Several nationalities and ethnic groups were also represented. However, the religious orientation of the group was predominantly Catholic. The measure was

found to have high reliability over a four-week test-retest interval ( $r = .80$ ) (Pino et al., 1984).

The content validity of the CVFES has only been examined in one study (Pino, 1985). In this study, children in two school grades of the original sample were selected at random and asked to write "the common meaning" of each picture. Two independent scorers evaluated each response to find if it matched the FES scale dimension. An inter-rater reliability of .84 was obtained. In order to determine how well raters agreed with the children's responses,  $Z$  scores were calculated. All subscales were correctly identified by the children in the two grades.  $Z$  scores ranged from -3.01 to -7.2 with a probability factor of less than .01. Even though the normative data available for this measure is limited, it was utilized in this study because it is the only instrument presently available to evaluate family environment perceptions of young children. The measure's limited norms and validity data make comparisons between FES and CVFES scores experimental in nature.

The Hollingshead Four Factor Index of Social Status (Hollingshead, 1975) was used as a demographic index of social status for subjects participating in this study. This index can be used to estimate the socioeconomic status (SES) of both married and unmarried individuals of both genders. It can also be used as an SES index for families. This measure uses four factors to determine social status:

education, occupation, marital status, and gender. However, gender does not enter in the computation of the SES index even though the measure is used for either gender (Gottfried, 1985).

Individuals' occupations are given a score based on a 9-point scale. Occupational categories are based on 450 occupational titles and codes of the 1970 United States Census (Hollingshead, 1975). The educational factor is based on the number of years of education an individual has completed. Scores are based on a 7-point scale. A composite score is obtained by multiplying the occupational and educational factors by factor weights.

Gottfried (1985) examined the properties of various measures of socioeconomic status and concluded that this measure was reliable and valid. He recommended its use in developmental research because it allows for the evaluation of socioeconomic status (SES) in single parent families as well as in two parent-families.

#### Procedure

Boys with ADHD and their mothers were recruited through parent training groups, support groups, and public schools. Participation was voluntary. For parent training and support groups, mothers were informed about the study and invited to participate during meetings. All mothers received and signed a consent form for their children and themselves (see Appendix A). Mothers were asked to obtain

their children's consent to participate prior to signing the form. This form informed them about the nature of the study, the time required for their participation, the confidentiality of their responses and identity, and their right to withdraw from the study at any point. The subjects were also informed that the study focused on obtaining information about characteristics of families with children with and without attentional difficulties. Mothers were informed that they would be required to provide information about their families and to complete three self-report measures about themselves, their children, and their families. In addition, they were informed that all identifying information was confidential and their responses were to be recorded in a manner that would not identify them or their children. Mothers were also informed about the measure their sons would be completing and the approximate time for completion.

Upon completion of the consent form, mothers of ADHD boys completed a short demographic data form (see Appendix B), the CPRS-R, the SCL-90-R, and the FES. Boys with ADHD recruited from parent training and support groups completed the CVFES at the time their mothers completed their self-report measures. Verbal consent was obtained from the boys prior to administration of the measure. The CVFES was administered individually to boys with ADHD to reduce distracting stimuli. Experimenters were available to assist

the boys with completion of the measure and answer questions.

Mothers of boys with ADHD recruited through public schools received a letter, introducing them to the study, and the consent form. Each school participating in the study identified boys with ADHD eligible to participate based on the inclusion criteria outlined for the study. Mothers who agreed to participate in the study were sent a package containing the demographic form, the CPRS-R, the SCL-90-R, and the FES. They were asked to complete the package and to return it to their sons' school. Experimenters administered the CVFES individually to boys with ADHD at their schools after obtaining their verbal consent.

Boys in the nonreferred group and their mothers were recruited from public schools. Mothers in this group received a letter of introduction to the study and the consent form for this group (See Appendix B). Mothers who agreed to participate in the study received a package with the demographic form and the three self-report measures. They were asked to complete the forms and return them to their sons' schools. All boys in this group completed the CVFES in group administrations after giving verbal consent for their participation to experimenters. Several experimenters were available to answer questions.

## CHAPTER III

### RESULTS

A 2 X 5 Multivariate Analysis of Variance (MANOVA) was used to test the first three hypotheses of this study. Dependent measures included symptoms of maternal distress measured by the Global Severity Index (GSI) of the Symptom Checklist 90-Revised (SCL-90-R), maternal perceptions of hyperactivity measured by the Hyperactivity Index of the Conners' Parent Rating Scale (CPRS-48), and three areas of family environment functioning measured by the Cohesion, Expressiveness, and Conflict subscales of the Family Environment Scale (FES). The MANOVA analysis was found to be significant utilizing the Wilks' Lambda Criterion ( $F = 26.26$ ,  $df = 5, 54$ ,  $p < .0001$ ). Five one-way Analyses of Variance (ANOVA) were completed in order to explore which variables contributed to the significant MANOVA results. Table 3 summarizes these results.

Hypothesis 1 predicted that mothers of boys with ADHD would report more present emotional distress than mothers of nonreferred boys. An ANOVA completed for maternal symptoms of distress showed no significant differences between the two groups of mothers ( $F = 3.25$ ,  $df = 1, 58$ ,  $p < .077$ ). Therefore, Hypothesis 1 was not confirmed. In addition, none

of the two groups of mothers showed clinically significant scores on the GSI. None of the two groups showed clinically significant scores on the Depression and Anxiety subscales of the SCL-90-R.

Table 3

Means and Standard Deviations for Analyses of Variance of Maternal Distress and Perceptions of Hyperactivity and Family Environment

	ADHD Group		Nonreferred Group		
	Mothers		Mothers		
	<u>N</u> = 30		<u>N</u> = 30		
Variable	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>F</u>
GSI	55.20	8.71	50.27	12.20	3.25
Hyperactivity Index	75.53	11.61	47.43	9.74	103.13**
a					
FES :					
Cohesion	49.93	16.25	63.10	6.10	17.27**
Expressiveness	51.87	11.02	57.90	9.65	5.09*
Conflict	54.67	12.28	46.87	10.09	7.22*

a  
FES = Family Environment Scale.

\*  $p < .05$ . \*\*  $p < .01$



Hypothesis 2 stated that mothers of boys with ADHD would perceive them as more hyperactive than mothers of nonreferred boys. An ANOVA confirmed this hypothesis and showed significant differences between the two groups of mothers ( $F = 103.13$ ,  $df = 1,58$ ,  $p < .0001$ ). Mothers in the ADHD group perceived their sons as significantly more hyperactive than mothers in the nonreferred group. The mean score in this scale for mothers of boys with ADHD was clinically significant ( $M = 75.53$ ). Whereas, the mean score in this scale for mothers of nonreferred boys was not clinically significant ( $M = 47.43$ ).

Hypothesis 3 predicted that mothers of boys with ADHD would report more negative perceptions of their family environment than mothers of nonreferred boys. ANOVAS completed on the three family environment subscales of Cohesion, Expressiveness, and Conflict of the FES showed significant differences between the groups. Mothers of boys with ADHD reported less cohesion ( $F = 17.27$ ,  $df = 1,58$ ,  $p < .0001$ ), less expressiveness ( $F = 5.09$ ,  $df = 1,58$ ,  $p < .027$ ), and more conflict ( $F = 7.22$ ,  $df = 1,58$ ,  $p < .009$ ) in their families than mothers of nonreferred boys. Therefore, Hypothesis 3 was confirmed.

A 2 X 3 MANOVA was completed to evaluate Hypothesis 4. This hypothesis stated that boys with ADHD would have more negative perceptions of their family environment than nonreferred boys. The boys' perceptions of family

environment, measured by the Cohesion, Expressiveness, and Conflict subscales of the CVFES, were compared. The analysis showed no significant differences between the two groups utilizing the Wilks' Lambda Criterion ( $F = 1.867$ ,  $df = 3,56$ ,  $p < .146$ ). Therefore, Hypothesis 4 was not confirmed. Means and standard deviations are presented in Table 4.

Table 4

Means and Standard Deviations of Perceptions of Family Environment of Boys with ADHD and Nonreferred Boys

	ADHD/Boys		Nonreferred/Boys		
	<u>N</u> = 30		<u>N</u> = 30		
Variable	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>F</u>
<sup>a</sup>					
CVFES :					
Cohesion	55.43	13.24	57.47	12.67	0.04
Expressiveness	57.13	14.91	62.83	10.43	2.94
Conflict	34.57	12.38	37.30	11.07	0.81

<sup>a</sup>

CVFES = Child Version of the Family Environment Scale

Hypothesis 5 stated that no significant differences would be found in perceptions of family environment between boys with ADHD and their mothers. Three dependent  $t$ -tests were completed for the family environment subscales of Cohesion, Expressiveness, and Conflict. The mothers' FES results were compared to their sons' CVFES results. Table 5 summarizes these analyses. Results showed no significant differences between boys with ADHD and their mothers on perceptions of cohesion and expressiveness. A significant difference was found between the two groups in their perceptions of conflict. Mothers of boys with ADHD reported more conflict in their families than their sons ( $t = -7.067$ ,  $p < .0001$ ).

Table 5

T-tests for Perceptions of Family Environment of Boys with ADHD and Their Mothers

Variable	<u>M</u>	<u>SD</u>	<u>t</u>
Cohesion	5.50	3.59	1.53
Expressiveness	5.27	3.59	1.53
Conflict	-20.10	2.84	-7.07*

\*  $p < .01$ .

### Exploratory Analyses

Three dependent  $t$ -tests were completed to compare family environment perceptions of nonreferred boys and their mothers. The mothers' responses on the FES Cohesion, Expressiveness, and Conflict subscales were compared to their sons' responses on the CVFES for the same subscales. Table 6 summarizes these analyses. There were no significant differences between nonreferred boys and their mothers in perceptions of cohesion and expressiveness. There was a significant difference between mothers and sons in their perceptions of conflict within the family. Mothers perceived significantly more conflict in their families than their sons ( $t = -3.35$ ,  $p < .002$ ).

Table 6

#### T-tests for Perceptions of Family Environment of Nonreferred Boys and Their Mothers

Variable	<u>M</u>	<u>SD</u>	<u>t</u>
Cohesion	-5.63	2.67	-2.11
Expressiveness	4.93	2.58	1.91
Conflict	-9.57	2.85	-3.36*

\*  $p < .01$ .

## CHAPTER IV

### DISCUSSION

Attention Deficit Hyperactivity Disorder (ADHD) is believed to have a major influence on the families of children with this disorder. The family environment is considered to be an important level of analysis in efforts to understand this disorder (Barkley, 1990). However, few studies to date have attempted to explore this variable. Furthermore, there are no studies to date that have explored how children with ADHD perceive their family environments. The main purpose of the present study was to explore perceptions of family environment in boys with ADHD and their mothers and to compare these to the perceptions of nonreferred boys and their mothers. In addition, this study sought to explore the level of present emotional distress in mothers of ADHD and nonreferred boys and their perceptions of hyperactivity in their children.

Hypothesis 1 predicted that mothers of boys with ADHD would report more present emotional distress than mothers of nonreferred boys. Results indicated that the two groups of mothers did not differ in their reported level of emotional distress. Furthermore, none of the two groups of mothers showed clinically significant levels of emotional distress.

The groups also did not show clinically significant levels of depression or anxiety on the measure utilized in this study. This finding is inconsistent with results obtained in previous studies (e.g., Befera & Barkley, 1988; Brown & Pacini, 1989; Cunningham, Benness, & Siegel, 1988; Mash & Johnston, 1983a) which have suggested that mothers of children with ADHD show significant levels of emotional distress and depression. It also contradicts the notion that this group of mothers experiences significant levels of psychopathology.

Several factors may have contributed to this finding. Because the children included in the ADHD group had already been diagnosed at the time of the study, their mothers' reports may reflect how they feel after clinical and medical interventions have been utilized to deal with their sons' condition. In addition, other studies finding significant distress and depression have included children with ADHD and additional diagnoses in their samples which may have contributed to their findings. Also, all subjects that participated in this study were volunteers. More distressed mothers may have excluded themselves from participation.

Nevertheless, this finding suggests that mothers of children with ADHD do not experience emotional distress levels that would suggest psychopathology as previous studies have suggested. In fact, these mothers are quite similar to mothers of nonreferred children who do not

present with any significant level of emotional distress. The difference between these mothers may lie in the level of parenting related stresses mothers of children with ADHD experience rather than on levels of personal emotional distress.

Hypothesis 2 predicted that mothers of boys with ADHD would perceive their sons as more hyperactive than mothers of nonreferred boys. Results confirmed this hypothesis. Mothers in the ADHD group perceived their sons as significantly more hyperactive than mothers in the nonreferred group. The difference was also of clinical significance. This finding suggests that even when children with ADHD are taking medication and/or receiving therapeutic services for ADHD symptoms, mothers may still perceive a high level of hyperactive behavior in their sons.

This finding is consistent with the results obtained by Cunningham, Benness, and Siegel (1988) who found that mothers of children with ADHD perceived them as more hyperactive than mothers of nondisabled children utilizing the Conners Parent Rating Scale (CPRS). Their sample of children with ADHD was quite similar to the one included in this study in that the children had already been diagnosed with ADHD and were receiving services from pediatricians and child psychiatrists prior to their participation.

Hypothesis 3 predicted that mothers of boys with ADHD would have more negative perceptions of their family

environments than mothers of nonreferred boys. Results supported this hypothesis. Mothers of boys with ADHD reported significantly less cohesiveness and expressiveness in their families than mothers of nonreferred boys. They also reported significantly more conflict in their families than mothers of nonreferred boys. These results are consistent with those of Brown and Pacini (1989) who found that parents of children with ADHD reported less support, increased stress, less cohesion, and greater conflict in their families. Interestingly, Brown and Pacini also utilized the Family Environment Scale (FES) to measure family environment. Brown and Pacini, however, found significant levels of depression in mothers.

According to Cunningham et al. (1988), the family environment of families of children with ADHD resembles that of families of nondisabled children. The authors found no significant differences in family functioning between families of children with ADHD and families of nondisabled children. The authors concluded that ADHD is more related to parental stress than to family functioning. The findings of the present study suggest the contrary. ADHD seems to have an influence on family functioning, especially on increased family conflict.

Hypothesis 4, which predicted that boys with ADHD would have more negative perceptions of their family environment than nonreferred boys, was not confirmed. There were no



significant differences in the way the two groups of boys perceived their family environments. In fact, both groups of boys tended to view their family environments as cohesive, expressive, and conflict free. Interestingly, the ADHD group's average score on the Conflict subscale was the lowest of the two groups. There are no studies to date to which we can compare this finding.

This finding can be due to several factors. First, it may be that children, in general, tend to remain more sheltered by adult family members from family problems. Therefore, they may not be fully aware of difficulties in the family. However, this explanation does not appear to account fully for the positive perceptions children with ADHD have of their families which contrast with the problems reported by their mothers about their overactive behaviors and with their mothers' views of family life.

It is important to note that the measure utilized in this study to evaluate the perceptions of children, the Children Version of the Family Environment Scale (CVFES), has problems with validity and limited normative data. These factors may have influenced the results obtained. It seems important to develop more psychometrically sound instruments which can be used to establish more clearly how children with ADHD view their families.

Hypothesis 5 predicted that boys with ADHD and their mothers would not be different in their perceptions of their

family environment. Boys with ADHD and their mothers did not show any significant differences in their views on cohesion and expressiveness in their families. However, mothers perceived their family life as more conflictual than their sons. There are no studies to date that compare perceptions of family environment between boys with ADHD and their mothers. These results, however, must be interpreted with caution because any comparisons between the two family environment measures used in this study are experimental in nature.

The findings of this study suggest a discrepancy between how boys with ADHD and their mothers view their family environment. There is evidence that boys with ADHD tend to underreport behavior problems and to protect their self-esteem by perceiving significantly less problems with their behaviors. Hoza, Pelham, Milich, Pillow, and McBride (1993) in analyzing the results of their comparison of self-perceptions and attributions of boys with ADHD and nondisabled boys suggested that boys with ADHD report a positive view of themselves in spite of significant academic and social problems. The authors suggested two possible explanations for their results which seem useful in explaining the present study's findings. First, they suggested that children with ADHD may have an adaptive positive illusory bias. In other words, they may have wishes or ideals about how they want to be and their reports

reflect this. The second explanation centers on the idea that children with ADHD may have distorted and unrealistic perceptions of their behaviors. These distorted perceptions, which the authors labelled positive delusions, are described as self-protective. In other words, children with ADHD try to "save face" in light of the academic and social problems they face. Accurate perceptions may be too distressing to confront for children with ADHD. They appear to be aware of negative events in their lives but do not feel responsible for them and may attribute them to ADHD and not to themselves. In addition, if children with ADHD have deficiencies in cause and effect thinking, they would have problems understanding how their behaviors affect others. Therefore, they may not perceive and report accurately their behaviors, especially if these behaviors lead to increased conflict with others. Therefore, boys with ADHD may perceive increased conflict in their homes, but fail to report it in order to preserve their self-esteem. They may also not feel responsible for conflict in their homes. Therefore, their mothers' perceptions may more accurately reflect family environment characteristics.

Even though these results are experimental in nature, they offer initial information about the perceptions boys with ADHD have of their families. It suggests that they may not be aware of how their behaviors may influence other family members or that they choose to deny problems related

to their behaviors within the family. Clinical interventions can be directed toward helping these children begin to focus on their behaviors toward other family members. It would also seem important to research this area further in order to obtain a clearer understanding of how these children view their family life.

In summary, the findings of the present study suggest that mothers of boys with ADHD do not differ from mothers of nonreferred boys based on levels of emotional distress. None of the groups showed significant problems in this area. Mothers of children with ADHD do perceive their sons as significantly more hyperactive than mothers of nonreferred boys. They perceive their families as less cohesive and expressive. They also view their families as more conflictual than mothers of nonreferred boys. Both groups of mothers, however, view their families as more conflictual than their sons. But, mothers of boys with ADHD perceive their families as significantly more conflictual. This seems to suggest that ADHD may have a significant impact on family functioning, especially in the level of conflict these families experience. In addition, both groups of boys did not differ from each other on their perceptions of family environment. They viewed their families as cohesive, expressive, and conflict free. The positive perceptions boys with ADHD maintain of their family functioning contrast with those of their mothers and suggests that perhaps these

children may deny difficulties they and other family members face.

#### Limitations of the Study

Several factors limit the generalizability of the results obtained in this study. First, the subjects that participated in the study were not randomly selected, but were all volunteers. Therefore, only subjects motivated to participate may have included themselves in the study. This may have excluded children with more problems related to ADHD.

Second, subjects knew in advance the nature of the study because the main criteria for sample selection was presence or absence of ADHD. This may have influenced subjects' willingness to participate in the study. In addition, all subjects in the ADHD group had already been diagnosed with ADHD and were receiving academic, psychological, and/or medical (e.g. medication) services. This limits generalizability of results only to children with ADHD who have been diagnosed with the disorder and have received some type of treatment or intervention. It excludes children who have ADHD symptoms but have not been formally diagnosed. Finally, the sample of children with ADHD had a primary diagnosis of ADHD. Results may not be applicable to other children with ADHD with concurrent diagnoses, such as Oppositional Disorders or Learning Disabilities.

Third, subjects were predominantly caucasian, from a middle class socioeconomic background, and from two parent-families. These characteristics limit results to children with ADHD who come from families with similar characteristics. It seems important to include a more diverse sample of subjects in future studies.

Finally, only boys and their mothers participated in the study. This limits generalizability of results to these groups only. It would be important to also evaluate the perceptions of girls with ADHD. In addition, studies which include fathers of children with ADHD are needed. This would provide an opportunity to evaluate the entire family system.

Another major limitation of the study is the instrument utilized to measure children's perceptions of family environment. The CVFES has limited validity and normative data. In addition, the modifications made to the CVFES in order to facilitate understanding of the items need further validation. Therefore, results obtained with this measure have to be interpreted with caution and must be regarded as experimental in nature. Efforts are needed to develop more psychometrically sound instruments that can measure family environment perceptions in young children. Presently, the CVFES is the only measure available that can evaluate family environment perceptions in young children. Therefore, the

results obtained in this study offer initial data on the perceptions of boys with ADHD in this area.

The measures utilized in this study were all self-report instruments. This type of instrument is especially vulnerable to faking or malingering (Anastasi, 1988). Subjects can usually recognize answers that are more socially acceptable. A limitation of such measures is that subjects may be motivated to present themselves in a socially desirable manner or as more psychologically disturbed. Without any additional sources of data, the experimenter has no other way to validate subjects' responses. Therefore, it is possible that subjects in this study may have presented themselves in either a more favorable or unfavorable manner.

A methodological concern of this study involves its cross-sectional design. Subjects were tested at one point in time only. In addition, the sample used in the study grouped several cohorts. A longitudinal design with repeated measures may be useful in future studies in order to evaluate changes in families of children with ADHD across time. It would also offer the opportunity to follow several cohorts over time in order to account for developmental differences.

#### Implications

Results of this study suggest that the families of children with ADHD tend to experience problems which may be

more related to having a child with ADHD rather than to parental variables. These families encounter more overt conflict between family members, less support of each other, and less open expression of feelings than families with nonreferred children. The family environment in these families appears to be less supportive of its members. It is possible that because children with ADHD are difficult to manage, interactions between family members and these children are often negative. This can contribute to increased distress and conflicts within the family. This can lead to significant parenting distress which several studies have documented. It seems possible that parenting distress, rather than psychopathology, is associated to the negative family interactions reported in families of children with ADHD. It would be important to use interventions for these families which include the whole family system and which focus on improving the family members' interactions, communication, and coping strategies in an effort to foster a more supportive environment for children with ADHD and their family members.

Results of this study also suggest that children with ADHD tend to perceive their families as more supportive and as conflict free in spite of their mothers' more negative perceptions of their family's environment. This suggests that these children may deny the presence of problems in their families and may not see themselves as having any role



in family conflicts. Clinical interventions that can assist the child with ADHD in gaining awareness of how his or her behaviors influence others in their family are important. This type of intervention may help the child improve both family and peer relationships.

Research efforts are needed to continue exploration of how children with ADHD perceive their family environment and to validate the results obtained in this study. This study's results offer only an initial view of how families with ADHD children function. Efforts directed at improving psychometric properties of measures utilized in evaluating family environment and children's perceptions are needed. Information about the family environment of families with children with ADHD is needed in order to provide interventions that are appropriate and sensitive to the difficulties they face.

Future research studies in this area can seek to evaluate further personal emotional distress and parenting distress in an effort to find if these two concepts are related, if parents with ADHD children experience them, and under which circumstances they are experienced.

It also is important to generate research studies that include girls with ADHD in order evaluate gender differences in the manifestation of ADHD symptoms and its impact on the family. Fathers and siblings should also be included in future studies about families with children with ADHD in

order to evaluate the entire family system. Furthermore, research studies which include more diverse samples, children with ADHD and other clinical diagnoses, and children who have not received treatment for ADHD symptoms are needed in this area.

The family environment is perhaps the most crucial influence in a child's life. In families where a child has physical, medical, and/or psychological problems, the quality of the family environment can be significantly affected. The stresses of having a child with problems can increase the level of distress faced by all family members. Families with children with ADHD face such challenges. Yet, very little is known about the characteristics of these families' environment and even less is known about how the children involved view themselves within this context. The present study offers an initial glimpse into how these families function. More research efforts are needed in this area if ADHD is to be fully understood.

APPENDIX A  
RESEARCH CONSENT FORM

## Research Consent Form

I, \_\_\_\_\_, agree to participate in a study of family characteristics. The purpose of this study is to obtain information about families with boys with and without attentional problems. I understand that I will be asked to complete questionnaires about myself, my child's behaviors, and my family's characteristics. I have been informed that completion of these questionnaires will take approximately 30 minutes. I also give permission to the project director to obtain from school officials my child's general aptitude score. I understand that this score will be used solely for research purposes.

As parent/legal guardian of \_\_\_\_\_, I also give my consent for my son's participation in this study. I understand that he will be asked to complete a pictorial questionnaire about his family's characteristics. Completion of this questionnaire will take approximately 15 minutes.

I understand that the information gathered will be used for research purposes and that it will be recorded in a manner that it will not identify me or my child.

I understand that there are no personal risks for me or my child directly associated with this study. I also understand that I can withdraw from participation in the study at any time. I also understand that I can withdraw my child from participation in the study at any time.

If I have any questions or difficulties related to my participation or my son's participation in the study, I should contact, Lisa Costas, project director, at tel. (813) 974-2831 or Dr. David Baker, project supervisor, at (817) 565-2671.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

THIS PROJECT HAS BEEN APPROVED BY THE UNIVERSITY OF NORTH TEXAS COMMITTEE FOR THE PROTECTION OF HUMAN SUBJECTS (phone 565-3940)

APPENDIX B  
DEMOGRAPHIC INFORMATION FORMS

Subject #: \_\_\_\_\_ Date: \_\_\_\_\_

Child:

Age: \_\_\_\_\_ Date of Birth: \_\_\_\_\_

Grade: \_\_\_\_\_ Race: \_\_\_\_\_ Sex: \_\_\_\_\_

Current Medication: \_\_\_\_\_ Approximate date of ADHD diagnosis: \_\_\_\_\_

Who child lives with: \_\_\_\_\_ Both parents \_\_\_\_\_ Mother \_\_\_\_\_ Father \_\_\_\_\_ Other \_\_\_\_\_

Mother or Main Maternal Caregiver:

Age: \_\_\_\_\_ Race: \_\_\_\_\_

Marital status: \_\_\_\_\_ Single \_\_\_\_\_ Married \_\_\_\_\_ Divorced \_\_\_\_\_ Widowed

Mother's Education (check one):

- \_\_\_\_\_ less than 7th grade
- \_\_\_\_\_ junior high school (9th grade)
- \_\_\_\_\_ partial high school
- \_\_\_\_\_ high school graduate
- \_\_\_\_\_ partial college (at least one year) or specialized training
- \_\_\_\_\_ college graduate
- \_\_\_\_\_ graduate degree

Mother's current occupation: \_\_\_\_\_

Father or Main Paternal Caregiver:

Age: \_\_\_\_\_ Race: \_\_\_\_\_

Marital status: \_\_\_\_\_ Single \_\_\_\_\_ Married \_\_\_\_\_ Divorced \_\_\_\_\_ Widowed

Father's Education (check one):

- \_\_\_\_\_ less than 7th grade
- \_\_\_\_\_ junior high school (9th grade)
- \_\_\_\_\_ partial high school
- \_\_\_\_\_ high school graduate
- \_\_\_\_\_ partial college (at least one year) or specialized training
- \_\_\_\_\_ college graduate
- \_\_\_\_\_ graduate degree

Father's current occupation: \_\_\_\_\_

Family:

Number of children in household: \_\_\_\_\_

Number of people living in household: \_\_\_\_\_

Subject #: \_\_\_\_\_ Date: \_\_\_\_\_

Child:

Age: \_\_\_\_\_ Date of Birth: \_\_\_\_\_

Grade: \_\_\_\_\_ Race: \_\_\_\_\_ Sex: \_\_\_\_\_

Who child lives with: \_\_\_\_\_ Both parents \_\_\_\_\_ Mother \_\_\_\_\_ Father \_\_\_\_\_ Other \_\_\_\_\_

Has your child ever been treated for learning, emotional, or behavior problems?

\_\_\_\_\_ Yes \_\_\_\_\_ No If yes, please explain:

Mother or main maternal caregiver:

Age: \_\_\_\_\_ Race: \_\_\_\_\_

Marital status: \_\_\_\_\_ Single \_\_\_\_\_ Married \_\_\_\_\_ Divorced \_\_\_\_\_ Widowed

Mother's Education (check one):

- \_\_\_\_\_ less than 7th grade
- \_\_\_\_\_ junior high school (9th grade)
- \_\_\_\_\_ partial high school
- \_\_\_\_\_ high school graduate
- \_\_\_\_\_ partial college (at least one year) or specialized training
- \_\_\_\_\_ college graduate
- \_\_\_\_\_ graduate degree

Mother's current occupation: \_\_\_\_\_

Father or main paternal caregiver:

Age: \_\_\_\_\_ Race: \_\_\_\_\_

Marital status: \_\_\_\_\_ Single \_\_\_\_\_ Married \_\_\_\_\_ Divorced \_\_\_\_\_ Widowed

Father's Education (check one):

- \_\_\_\_\_ less than 7th grade
- \_\_\_\_\_ junior high school (9th grade)
- \_\_\_\_\_ partial high school
- \_\_\_\_\_ high school graduate
- \_\_\_\_\_ partial college (at least one year) or specialized training
- \_\_\_\_\_ college graduate
- \_\_\_\_\_ graduate degree

Father's current occupation: \_\_\_\_\_

Family:

Number of children in household: \_\_\_\_\_

Number of people living in household: \_\_\_\_\_

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