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# Internet Support Groups for Parents of Children with Add: An Examination of the Characteristics of Group Members and the Impact of Social Support on Parent Functioning

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LOYOLA UNIVERSITY CHICAGO

INTERNET SUPPORT GROUPS FOR PARENTS OF CHILDREN WITH ADHD:  
AN EXAMINATION OF THE CHARACTERISTICS OF GROUP MEMBERS AND  
THE IMPACT OF SOCIAL SUPPORT ON PARENT FUNCTIONING

A DISSERTATION SUBMITTED TO  
THE FACULTY OF THE GRADUATE SCHOOL  
IN CANDIDACY FOR THE DEGREE OF  
DOCTOR OF PHILOSOPHY

PROGRAM IN CLINICAL PSYCHOLOGY

BY

KRISTON BETH SCHELLINGER

CHICAGO, ILLINOIS

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## ABSTRACT

Attention-Deficit/Hyperactivity Disorder (ADHD) is one of the most common childhood psychiatric disorders and is associated with a variety of difficult behaviors. In addition, parents of children with ADHD experience significantly greater parenting stress and psychological distress than parents of children without ADHD. However, social support is a beneficial coping tool associated with increased mental and physical well-being in those experiencing stress. Although many turn to family and friends for social support, people sometimes go outside of their immediate support network and seek support groups. In recent years, Internet support groups have become a popular alternative to face-to-face support groups. However, limited empirical research has been conducted to understand the impact these groups have on participants. This is especially true for groups that target parents of children with behavioral problems, such as ADHD. To address these gaps in the literature, this study examined characteristics of individuals who participate in Internet support groups for parents of children with ADHD as well as the impact participation in these groups has on parent functioning. Results indicated that the majority of parent support group participants were married, well educated, and from middle socioeconomic backgrounds. Level of participation in the Internet support group was not associated with degree of parenting stress or parental depressive symptoms in multiple regression analyses. Furthermore, social support received from the Internet

support group was largely unrelated to these outcomes, although one meaningful three-way interaction emerged. Findings from this study indicate that although parents report many positive experiences associated with their participation in an Internet support group, their level of participation is not necessarily related to their functioning.

Additional research is needed to better understand potential benefits associated with participation in an Internet support group and the impact that social support received from these groups has on parent functioning.

## CHAPTER ONE

### INTRODUCTION

#### **Attention-Deficit/Hyperactivity Disorder and Parent Support: An Overview**

Attention-Deficit/Hyperactivity Disorder (ADHD) is one of the most common childhood psychiatric disorders and is associated with a variety of difficult behaviors including hyperactive and overactive behavior, impaired impulse control, difficulties with self-regulation, and problems with concentration and sustained attention (American Academy of Child and Adolescent Psychiatry [AACAP], 2007; American Psychiatric Association [APA], 2000; Barkley, 2003; Brassett-Harknett & Butler, 2007). With prevalence rates estimated between two and nine percent, it is clear that ADHD affects millions of children and families throughout the United States and worldwide (Pelham, Fabiano, & Massetti, 2005). The number of children suffering from ADHD is alarming because ADHD is not only associated with a number of negative outcomes in childhood and adolescence (e.g., poor academic achievement, impaired peer relationships), but is also associated with negative parental outcomes such as increased parenting stress, maternal depression, harsh parenting, and marital discord (Brassett-Harknett & Butler, 2007; Matza, Paramore, & Prasad, 2005; Pelham et al., 2005).

Parenting stress is experienced when the demands associated with parenting exceed a parent's perceived abilities and resources (Koeske & Koeske, 1990). Parents of children with ADHD experience significantly greater parenting stress than parents of

children without ADHD, which places them at risk for negative outcomes such as depression and psychological distress (Barkley, 2003; Brassett-Harknett & Butler, 2007; Pelham et al., 2005). However, social support has long been recognized as a beneficial coping tool associated with increased mental and physical well-being in those experiencing stress. Social support can take many forms, but in general it refers to communication or interactions between individuals that assists people in coping with a difficult experience (Tanis, 2007). Family and friends often provide support to members of their social network in times of need. However, relying on one's family and friends can result in difficulties when the person seeking support feels embarrassed or believes he or she is a burden on loved ones (Barrera, 1986). Thus, people sometimes go outside of their immediate support network and seek support groups that are comprised of people who are experiencing a similar situation (e.g., addiction, depression, loss), but that are not necessarily similar in terms of age, gender, ethnicity, or other demographic factors.

For several decades, support groups have provided a forum for individuals experiencing a wide range of problems to gather and gain social support. Participation in support groups has been found to be associated with reduced feelings of isolation and loneliness and increased mental well-being (Perron, 2002). However, many people are not able to access face-to-face support groups (that meet in person) due to geographical, temporal, or spatial barriers or limitations (Buchanan & Coulson, 2007). Thus, Internet support groups have become a popular alternative to traditional face-to-face support groups.



Online communication offers a possibility for people around the world to communicate in a way that would not be possible in face-to-face circumstances. Previous research has found that people suffering from a variety of physical illnesses (e.g., cancer) and mental or emotional difficulties (e.g., anxiety) report positive outcomes associated with participation in an Internet support group (McKenna, 2008). In addition, there is some evidence to suggest that online support groups benefit parents of children with psychiatric disorders (Garbe, 2008). Research has found that people are drawn to online groups for many reasons including the ability to remain anonymous and being able to access the group at a time and place that is convenient to the user (Tanis, 2007). In addition, people who are reluctant to discuss their problems in a face-to-face interaction report being more comfortable interacting with others on the Internet and benefit both socially and emotionally from their participation in an online group (McKenna, 2008). Thus, Internet support groups are easily accessible to individuals experiencing a variety of challenging life circumstances, and the research base suggests that many members of online groups benefit from their participation.

### **Statement of the Problem**

Although Internet support groups have become a popular area of investigation in recent years, there is still much work to be done. First, previous research has typically focused on individuals with physical health conditions (e.g., AIDS, cancer; Barnett & Hwang, 2006; Coulson, 2005; Mendelson, 2003) and very few studies have examined support groups for caregivers of children with emotional and behavioral problems. Second, little is known about what motivates users to join groups, the social and

emotional effects of participation, and any potential hazards to participation in online support groups (Buchanan & Coulson, 2007; Kral, 2006; Tanis, 2007). Third, previous research has typically been exploratory in nature or has had significant methodological limitations such as high dropout rates or inadequate statistical power (Eysenbach, Powell, Englesakis, Rizo, & Stern, 2004). Finally, although it has been well established that parents with a child who has ADHD experience a great deal of stress (Baker, 1994; Fischer, 1990; Harrison & Sofronoff, 2002) and benefit from receiving social support to cope with stress (Mash & Johnston, 1983; Podolski & Nigg, 20001), the possible moderating impact of social support received from Internet support groups on parenting stress has yet to be examined. This study aimed to address these gaps in the literature by examining the relation between participation in an Internet support group for parents of children with ADHD and parent outcomes (i.e., degree of parenting stress, depressive symptoms). In addition, the potential moderating impact of two types of social support (enacted and perceived support) was explored.

### **Purpose**

Research on Internet ADHD support groups is needed because millions of families are impacted by ADHD and professionals who work with this population are largely unaware of the impact these groups have on those who participate. In addition, researchers have not yet fully explored the demographic characteristics of Internet support group participants or factors that contribute to individuals joining an Internet support group. Therefore, this study sought to gain a better understanding of: (1) the demographic characteristics of parents in Internet support groups, (2) the reasons why

parents join support groups, (3) stressors reported by parents raising a child who has ADHD, (4) the impact of social support on parent functioning, and (5) psychosocial outcomes related to participation in an Internet support group. In addition, social support variables that may moderate the relation between participation in an online support group and parent outcomes (e.g., depressive symptoms, parenting stress) were explored.

## CHAPTER TWO

### LITERATURE REVIEW

Attention-Deficit/Hyperactivity Disorder (ADHD) is not only one of the most common psychiatric disorders that first appears in childhood, but it is also one of the most studied child psychiatric disorders (AACAP, 2007; APA, 2000; Barkley, 2003; Brassett-Harknett & Butler, 2007). There is also a wealth of information about the positive impact social support has on mental health when people experience stressful life events (Cohen & Wills, 1985; Koeske & Koeske, 1990; van Kraayenoord, 2002). In addition, Internet support groups for those experiencing physical and mental health disorders has become a growing area of interest and research (Barnett & Hwang, 2006; Kral, 2006; Madara, 1997; Tanis, 2007). The following literature review examines these topics as well as the limitations of the research base on Internet support groups for parents of children with ADHD. First, a review of ADHD is provided. Second, theories about social support and the impact of support groups are explored. Third, the growing use of the Internet as a means to access social support is discussed. Fourth, limitations of the current research base on ADHD, parent coping, and Internet support groups are outlined. Finally, research questions and hypotheses for the current study are presented.

#### **Attention-Deficit/Hyperactivity Disorder**

As mentioned previously, Attention-Deficit/Hyperactivity Disorder (ADHD) is one of the most common and well studied psychiatric disorders that first appears in

childhood (Barkley, 2003). This section reviews the research literature related to the: (1) description of ADHD, (2) incidence of ADHD, (3) etiology of ADHD, (4) common disorders that co-occur with ADHD, (5) impairments associated with ADHD, (6) impact of ADHD on parents and families, (7) treatment approaches for ADHD, and (8) potential barriers to treatment.

### **Description of ADHD**

ADHD is characterized by difficulties with hyperactivity, concentration, inattention, self regulation, and impulse control (APA, 2000; Barkley, 2003; Brassett-Harknett & Butler, 2007; Chronis, Jones, & Raggi, 2006; Pelham et al., 2005). To a certain extent all children, especially young children, exhibit difficulties with sustained attention, overactivity, and impulsivity. However, the key factor that differentiates ADHD from typical child behavior is that the child's ADHD symptoms interfere with his or her social, academic, or occupational functioning in two or more settings (e.g., home, school, outside activities; APA, 2000). Although the label for the disorder has changed over time, child behavior disorders characterized by problems with impulse control, inattention, and hyperactivity have been reported in the psychiatric literature since the early twentieth century (Barkley, 2003). In addition, the behavior patterns characteristic of this disorder are seen in children of various racial and ethnic backgrounds throughout the world (APA, 2000; Barkley, 2003).

Two types of behavior patterns characterize ADHD: (1) hyperactivity and impulsivity and (2) inattention (APA, 2000). Children with ADHD might exhibit one or both of these behavior patterns (Barkley, 2003; Mattox & Harder, 2007). Therefore, there

are three different subtypes of ADHD: (1) ADHD, Predominantly Inattentive Type, (2) ADHD, Predominantly Hyperactive-Impulsive Type, and (3) ADHD, Combined Type (diagnostic criteria are met for both the Inattentive and Hyperactive-Impulsive Type; APA, 2000). Although it has been argued that these three subtypes may actually be indicative of different neurological problems, developmental trajectories, and prognosis (see Barkley, 2003), research studies typically include children with all subtypes of ADHD. This study also included children with all subtypes of ADHD. Thus, unless explicitly indicated, the literature review discusses ADHD in general and not specific subtypes of ADHD.

Symptoms of hyperactivity, impulsivity, and inattention are manifested in different behaviors throughout childhood and adolescence. Children with symptoms of hyperactivity exhibit excessive levels of energy, talk a great deal, and have difficulties remaining seated and participating in quiet activities (APA, 2000; Mattox & Harder, 2007; Pelham et al., 2005). Symptoms of impulsivity, on the other hand, are typically described as impatience, disinhibition, difficulties delaying a response or gratification, interrupting others when they are speaking, failing to listen to directions, and engaging in inappropriate or dangerous behavior without considering the consequences of such behavior (APA, 2000; Barkley, 2003). Finally, inattentive symptoms of ADHD are experienced as an inability to sustain attention during tasks, difficulty ignoring distractions and returning to work after becoming distracted, problems with keeping one's mind on the task at hand, and challenges remembering and following through with rules and instructions (APA, 2000; Barkley, 2003; Mattox & Harder, 2007).

Research suggests that certain symptoms of ADHD are more likely to be exhibited at different points in development. For example, symptoms of hyperactivity and impulsivity are likely to appear earlier in life and are commonly seen in preschool and school-aged children (Brassett-Harknett & Butler, 2007). Symptoms of inattention, on the other hand, are likely to appear later in life and are more often seen in adolescence and adulthood (AACAP, 2007). Thus, a child with ADHD is likely to exhibit different symptoms over time.

### **Incidence of ADHD**

Large epidemiological studies have estimated the prevalence of ADHD to be between two and nine percent in children of all ages (APA, 2000; Pelham et al., 2005). However, these rates vary based on age of the child, gender, socioeconomic status, country of origin, ethnicity, and the measure used to determine diagnosis (Barkley, 2003).

**Age.** Children are most likely to be diagnosed with ADHD between the ages of five and ten (Brassett-Harknett & Butler, 2007). When prevalence rates in specific age groups are examined more closely, the highest rates of ADHD are seen in preschool-aged children, with an estimate of four percent of girls and eight percent of boys meeting diagnostic criteria (Barkley, 2003). Many children continue to experience symptoms of ADHD during the elementary school years and the prevalence rate of ADHD in school-aged children is estimated to be between three and seven percent (APA, 2000). The lowest rates of ADHD are seen in adolescence, with only one to two percent of girls and one to five percent of boys meeting criteria for ADHD (Barkley, 2003).

Although research suggests that prevalence rates of ADHD decline with age, it is important to note that 60-85% of those diagnosed with ADHD in childhood will continue to meet diagnostic criteria in adolescence (AACAP, 2007). It has been suggested that the decrease in prevalence rates of ADHD over time is likely due to the fact that the diagnostic criteria was not developed for adolescents and young adults (Barkley, 2003). In addition, Barkley (2003) found that when a developmentally referenced cutoff of functioning is used to compare adolescents and young adults with ADHD to controls, those with ADHD exhibit significantly poorer adjustment and occupational functioning. Therefore, ADHD is seen in children, adolescents, and adults, but the prevalence of ADHD over the lifespan remains unclear.

**Gender.** ADHD is more frequently diagnosed in boys than girls. Although the ratio differs depending on type of ADHD and setting (i.e., clinic-referred children vs. community sample), the male-to-female ratio is estimated to be approximately 3:1 (APA, 2000; Barkley, 2003). However, girls with ADHD are typically similar to boys in degree of impairment, comorbidity, and deficits in intelligence (Barkley, 2003) and it has been suggested that ADHD is underdiagnosed in females (Brassett-Harknett & Butler, 2007). In fact, some have argued that sex differences in rate of diagnosis are due to external factors and biases and not to actual gender differences in prevalence. For example, the diagnostic criteria were developed based on a sample that predominantly consisted of males, thus the current diagnostic criteria may not be as representative of the symptoms typically seen in females (Barkley, 2003). In addition, parents, teachers, and other professionals may have biases in identification and referral that lead them to be more



likely to identify ADHD symptoms in boys as opposed to girls (Brassett-Harknett & Butler, 2007). Thus, although gender differences in the prevalence of ADHD are apparent, many females suffer from ADHD and experience similar challenges seen in males.

**Socioeconomic status.** Research suggests that socioeconomic status (SES) and ADHD have an inverse relationship, with rates of ADHD increasing as SES decreases (Barkley, 2003). However, it has been argued that this finding is due to confounding variables rather than SES (Mattox & Harder, 2007). For example, when other conditions (e.g., Conduct Disorder, Oppositional Defiant Disorder) are statistically controlled for, differential prevalence rates in socioeconomic groups are no longer evident (Szatmari, Offord, & Boyle, 1989). Therefore, it is possible that differential rates of ADHD are due to third variables and not SES per se.

**Country of origin.** ADHD is found in numerous countries and cultures throughout the world. However, prevalence rates of ADHD vary between countries and cultures. For example, some countries such as the Netherlands, China, and Brazil report lower prevalence rates of ADHD compared to the United States (3.8%, 5.3%, and 5.8%, respectively) while other countries such as the United Arab Emirates, Ukraine, and Columbia report higher prevalence rates (14.9%, 19.8%, and 20%, respectively; Barkley, 2003). Although a discussion of possible reasons for these differences in prevalence rates is beyond the scope of this study, it is clear that children around the world are afflicted with ADHD and it is not simply a phenomenon of American culture.

**Ethnicity.** In addition to varied prevalence rates in countries around the world, different prevalence rates have been reported between ethnic groups in the United States. Compared to European American children, African American children appear to have higher rates of ADHD, with 25% of African American children meeting the diagnostic criteria for ADHD when teacher ratings are used (Barkley, 2003). Differences between Latino and European American children have not been conclusively documented in research to date. However, it is important to note that in previous research, ethnicity has often been confounded with SES and higher rates of ADHD in African American children are likely due to environmental variables related to low SES such as living in unpredictable and stressful environments (Mattox & Harder, 2007). Thus, it is likely that observed differential rates of ADHD in ethnic groups in the United States are due to third variables (Barkley, 2003).

### **Etiology of ADHD**

Although ADHD has received a great deal of attention in the empirical literature, the causes of ADHD are poorly understood and several theories as to the etiology of ADHD have been proposed (Barkley, 2003; Pelham et al., 2005). Research thus far has revealed that genetic, neurological, biological, and environmental factors all play a role in the etiology of ADHD.

Family, twin, and adoption studies suggest that there is a significant genetic component to ADHD, especially the hyperactive-impulsive type (APA, 2000; Brassett-Harknett & Butler, 2007; Mattox & Harder, 2007). The heritability of ADHD has been estimated to be as high as 76%, and markers for ADHD have been identified on several

chromosomes (AACAP, 2007). In addition, siblings of children with ADHD who are not diagnosed with ADHD themselves have been found to exhibit mild (but significant) impairments in the same executive functions impaired in children with ADHD (Barkley, 2003). Thus, family members of children with ADHD are more likely to exhibit behavior patterns and deficits associated with ADHD than family members of children who do not have ADHD.

Research on the neurological and biological components of ADHD has become a popular area of inquiry over the past few decades. Various neurotransmitters (e.g., dopamine, norepinephrine), genes (e.g., DAT1 dopamine transmitter gene, DRD4 repeater gene), and areas of the brain (e.g., basal ganglia, cerebellum, frontal lobe) have been implicated in ADHD (AACAP, 2007; Barkley, 2003; Brassett-Harknett & Butler, 2007; Pelham et al., 2005). Low birth weight, prematurity, and brain injuries at birth have also been identified as risk factors for ADHD (Barkley, 2003). However, research has been limited by changing diagnostic criteria, cross-sectional research methods, small sample sizes, and contradictory findings (Barkley, 2003; Brassett-Harknett & Butler, 2007). Thus, although it is clear that neurological and biological factors are important in the etiology of ADHD, more research is needed to better understand the complex role these components play in the development of ADHD.

Environmental toxins appear to play some role in the development of ADHD. Factors such as prenatal exposure to alcohol and tobacco smoke increase the risk for ADHD (Barkley, 2003; Smith, Barkley, & Shapiro, 2006). In addition, exposure to lead in early childhood increases the risk for ADHD (Mattox & Harder, 2007). Therefore, it is

possible that prenatal and postnatal exposure to toxins contribute to the development of ADHD in some children.

Potential ecological factors have also been implicated in the etiology of ADHD. Children with ADHD are more likely to come from families characterized by high levels of conflict and marital discord, and parents of children with ADHD are more likely to have mental health problems themselves (Brassett-Harknett & Butler, 2007; Pelham et al., 2005). However, these findings should be interpreted with caution when considering the etiology of ADHD. First, it is possible that family environmental factors are a consequence and not a cause of ADHD and research has yet to provide compelling evidence for the temporal sequence of ecological factors and the development of ADHD (Brassett-Harknett & Butler, 2007). Second, as mentioned above, ADHD has a substantial genetic component and studies on ecological factors that contribute to ADHD have often failed to control for parental ADHD (Barkley, 2003). Therefore, although ecological factors may play an important role in ADHD, it is highly unlikely that ADHD is exclusively caused by the influence of family environment.

Taken together, research to date suggests that genetic, biological, and environmental factors all play an important role in the development of ADHD. Although there are many questions that have yet to be answered as to the exact influence of each of these factors, it is clear that ADHD develops through a confluence of factors which can impact the child with ADHD and his or her family in many ways.

### **Common Disorders that Co-occur with ADHD**

Children with ADHD are highly likely to meet the diagnostic criteria for at least one additional psychiatric disorder. In community samples, it has been found that up to 44% of children diagnosed with ADHD have at least one additional diagnosis and 43% have two or more additional diagnoses. Rates are even higher in clinic samples with 87% of children with ADHD having at least one additional diagnosis and 67% having two or more additional diagnoses (Barkley, 2003). These high rates of comorbidity illustrate the fact that it is much more likely for a child with ADHD to have at least one additional psychiatric diagnosis than it is for a child to have ADHD alone (Brassett-Harknett & Butler, 2007).

The most common disorders that co-occur with ADHD are the disruptive behavior disorders which include Oppositional Defiant Disorder (ODD) and Conduct Disorder (CD; Brassett-Harknett & Butler, 2007). In fact, rates of co-occurring disruptive behavior disorders are higher in children with ADHD than in children with any other psychiatric disorder and almost half of clinic-referred children who have ADHD also have ODD or CD (APA, 2000). Other disorders that commonly co-occur with ADHD are anxiety and mood disorders, learning disabilities, and sleep disturbances (Barkley, 2003). To further illustrate the high rates of co-occurring diagnoses with ADHD, one study of approximately 600 children with ADHD found that only 31.8% of the sample was diagnosed with ADHD alone while 29.5% had ADHD and ODD or CD, 14% had ADHD and an anxiety disorder, and 24.7% had ADHD, ODD/CD, and an anxiety disorder (MTA

Cooperative Group, 1999). Thus, children with ADHD are highly likely to struggle with a variety of behavioral and emotional concerns.

Co-occurring behavior problems in children with ADHD are important because they impact the child with ADHD as well as his or her family in important ways. For example, children with co-occurring ADHD and disruptive behavior problems are more likely to engage in substance use and abuse in adolescence and are more likely to have contact with the juvenile justice system (Braslett-Harknett & Butler, 2007). In addition, while families of children with ADHD have higher levels of stress in general, there is some evidence to suggest that families in which a child has ADHD and ODD have higher levels of stress and conflict than those with a child who has ADHD alone (Johnston, 1996). Therefore, emotional and behavioral problems that co-occur with ADHD are likely to place the child and family at increased risk of experiencing impairments in functioning and negative outcomes.

### **Impairments Associated with ADHD**

Children with ADHD experience impairment in a variety of domains including academic achievement, school functioning, and peer and family relations (Chronis et al., 2006; Mattox & Harder, 2007). Broadly, researchers have noted that children with ADHD exhibit deficits in various areas of executive functioning and these deficits contribute to associated impairments (Barkley, 2003). Some specific executive functioning impairments seen in children with ADHD include poor organizational abilities, impaired working memory, slow processing speed, difficulties with focusing and sustaining attention, trouble activating and shifting attentional effort, low frustration

tolerance, poor problem solving, and problems with monitoring and regulating action (AACAP, 2007; Brassett-Harknett & Butler, 2007). Although an extensive discussion of executive functioning impairments associated with ADHD is beyond the scope of this literature review, it is clear that these deficits impact the lives of children with ADHD and their families.

Children with ADHD experience a variety of problems at school and exhibit difficulties with academic and school functioning (Barkley, 2003). In fact, the classroom teacher is often the first to note concerns about the child's behavior (Pelham et al., 2005). In the classroom, children with ADHD are often disruptive and have difficulties remaining seated, sustaining attention when given directions or information, and sometimes exhibit noncompliance with requests from the teacher or other adults (APA, 2000; Pelham et al., 2005). Because of these disruptive behaviors, children with ADHD are more likely than their peers to be criticized and punished by their teacher during the school day and, in more extreme cases, suspended or expelled from school (Barkley, 2003).

In addition to behavior problems in school, children with ADHD exhibit scholastic problems and frequently have poor handwriting, turn in messy schoolwork, or fail to complete schoolwork altogether (APA, 2000; Barkley, 2003). Children with ADHD are also likely to experience learning problems and by age eleven, as many as 80% of children with ADHD are performing at least two grades below grade level (Barkley, 2003). School problems in childhood contribute to cognitive deficits and impaired academic achievement seen in adolescents with ADHD as well as higher rates

of school dropout, fewer years of completed schooling, and working in low-ranking occupations in adulthood (Brassett-Harknett & Butler, 2007; Mattox & Harder, 2007).

Children with ADHD also exhibit problems in interpersonal interactions which lead to impaired sibling and peer relationships, being less liked by peers, having fewer friendships, and high levels of peer rejection (Barkley, 2003). Social problems are largely due to children's ADHD symptoms such as problems with impulsivity and intrusiveness (e.g., blurt out answers, interrupt conversations, violate boundaries of other children), emotional regulation deficits (e.g., feelings hurt easily, aggressive when upset, initiate physical fights with peers), social skills deficits, and hyperactive behavior (Barkley, 2003; Brassett-Harknett & Butler, 2007; Mattox & Harder, 2007; Pelham et al., 2005). Children with co-occurring ADHD and conduct problems have the highest levels of peer problems and by fourth grade, up to 70% of children with these co-occurring problems report no reciprocal friendships and high levels of peer rejection (Barkley, 2003).

In addition to the above mentioned impairments, children with ADHD are at risk of delayed or impaired speech and problems with motor control. Research has found that between 30% and 64% of children with ADHD experience delayed onset of speech and/or speech and language disorders (Barkley, 2003; Mattox & Harder, 2007). In addition, whereas approximately 35% of typically developing children exhibit problems with motor coordination, up to 60% of children with ADHD exhibit motor problems (Barkley, 2003). These motor problems are likely to contribute to higher rates of accidents, injury, emergency room visits, and hospitalizations seen in children with ADHD (Barkley, 2003; Mattox & Harder, 2007).



## **Impact of ADHD on Parents and Families**

ADHD has been found to significantly and dramatically impact the relationship between the parent and child. Children with ADHD have been found to be less compliant, more negative and demanding, and less able to complete work without the assistance of their parents (Barkley, 2003; Fischer, 1990). Parents of children with ADHD have also been found to be more negative and directive, less responsive, less consistent in child behavior management, and provide fewer rewards and praise when interacting with their child who has ADHD (Barkley, 2003; Cunningham, Benness, & Siegel, 1988; Johnston, 1996). In fact, one study found that although mothers of children with ADHD did not display higher levels of anger in general, they did report higher levels of anger when with their child compared to mothers whose child did not have ADHD (Whalen et al., 2006). These negative patterns of parent-child interactions can begin as early as preschool and, although the intensity of conflict appears to lessen over childhood and adolescence, older youth with ADHD continue to exhibit higher degrees of parent-child conflict than their same-age peers (Barkley, 2003). However, as mentioned earlier, it is important to recognize that research has yet to provide compelling evidence related to the temporal sequence of child behavior problems, negative parent behavior, and high levels of parent-child conflict observed in families of children with ADHD (Brassett-Harknett & Butler, 2007). Furthermore, it is likely that parents and children influence each other, with negative child behavior increasing the likelihood of a negative response from parents, and vice versa (Barkley, 2003; Chronis, Chacko, Fabiano, Wymbs, & Pelham, 2004; Whalen et al., 2006).

Parents of children with ADHD report less parenting self-esteem, low parenting self-efficacy, less satisfaction in their role as a parent, and perceive parenting as a greater burden than parents who do not have a child with ADHD (Harrison & Sofronoff, 2002; Johnston, 1996; Mash & Johnston, 1983; Whalen et al., 2006). In addition, parents report greater frustration about their attempts to manage the child's behavior (Baker, 1994). Parents also report higher levels of guilt, more social isolation, and less satisfaction with relationships with extended family members (Cunningham et al., 1988). These negative experiences and views of parenting all contribute to greater levels of stress reported by parents of children with ADHD (Harrison & Sofronoff, 2002). However, some research suggests that parenting stress may vary depending on child and parent gender. For example, some studies have found that parents of boys with ADHD report higher levels of stress than parents of girls with ADHD (Bussing, Gary, Mason, Leon, Sinha, & Garvan, 2003). Alternatively, other studies have not found such gender differences (Baker, 1994; Fischer, 1990). In addition, the majority of previous research has been conducted exclusively with mothers and there is some evidence to suggest that fathers experience less parenting stress and psychological disturbance than mothers (Baker, 1994; Cunningham et al., 1998; Johnston, 1996). Thus, while it has been well documented that increased parenting stress is associated with ADHD, the degree to which this varies as a function of child and parent gender remains unclear.

ADHD significantly impacts the family environment and families are often characterized by higher levels of conflict, less warmth, and greater dysfunction (Cunningham et al., 1988; Johnston & Mash, 2001). In addition to the negative parent-

child interactions mentioned above, sibling interactions often have higher than expected levels of conflict and negative behavior, especially when siblings are playing without adult supervision (Fischer, 1990). Previous research has found that impulsive, hyperactive, and intrusive behaviors on the part of the child sets off a negative reaction chain in which the parent or sibling reacts negatively to the child's behavior which then exacerbates the child's negative behavior and increases family discord and conflict (Barkley, 2003; Whalen et al., 2006). In other words, research suggests that a cycle of negative behavior and hostile family interactions is perpetuated by a child's ADHD symptoms.

Parents of children with ADHD are also more likely to experience problems in their relationship with their partner or spouse and greater mental health problems themselves. In terms of parents' relationship with each other, parents of children with ADHD are more likely to experience disagreements about child-rearing and have higher rates of marital conflict, separation, and divorce than parents of children without ADHD (Fischer, 1990; Johnston, 1996; Pelham et al., 2005). Individually, parents of children with ADHD exhibit higher rates of mental health problems, especially depression and substance use disorders, than parents of children without ADHD (Brassett-Harknett & Butler, 2007; Chronis, Lahey, Pelham, Kipp, Baumann, & Lee, 2003; Johnston, 1996; Nigg & Hinshaw, 1998; Pelham et al., 2005). In addition, because of the genetic component of ADHD, many parents have symptoms of inattention, hyperactivity, and impulsivity themselves (Whalen et al., 2006).

Research has found that families with children who have co-occurring ADHD and ODD exhibit higher rates of conflict and impaired parent-child relationships, more problems in family functioning, and great caregiver strain than families of children without co-occurring ODD (Barkley, 2003; Bussing et al., 2003; Johnston, 1996). Parents of children with co-occurring ADHD and ODD also report greater marital conflict, higher rates of marital separation, and higher levels of maternal psychopathology and stress (Barkley, 2003; Johnston, 1996). In addition, whereas fathers of children with ADHD alone do not consistently report higher levels of psychological distress, fathers of children with co-occurring ADHD and ODD are more likely to report higher levels of psychological distress (Johnston, 1996). As mentioned earlier, the majority of children with ADHD have at least one additional co-occurring psychiatric problem and almost half of children with ADHD have co-occurring disruptive behavior problems, including ODD (APA, 2000; Barkley, 2003; Brassett-Harknett & Butler, 2007). This means that many families are at increased risk for conflict, negative parent-child interactions, and high levels of stress.

Understanding the impact of ADHD on parent and family functioning not only informs researchers about the influence of ADHD on families, but it also has important implications for treatment. For example, parents with high levels of depressive symptoms exhibit poorer responses to parent training programs and are less likely to implement behavioral strategies to manage the child's ADHD (Fischer, 1990). On the other hand, research examining the impact of stimulant medication on child and family functioning has found that when children on stimulant medication exhibit reductions in impulsive,

defiant, hyperactive, and emotional behavior, concurrent reductions are seen in negative responses from parents and a decrease in family conflict is observed (Barkley, 2003; Fischer, 1990; Whalen et al., 2006). Thus, to have the broadest impact on child, parent, and family functioning, it is necessary for interventions to not only focus on reducing child symptoms, but also on reducing parent stress and mental health difficulties. Popular treatment options for ADHD are discussed in the next section.

### **Treatment Approaches for ADHD**

Due to the fact that ADHD is such a common disorder, numerous treatment approaches have been developed. Psychopharmacological interventions, behavioral therapy, school interventions, and parent management training are among the most popular treatments for ADHD. Children with ADHD typically have multiple problems and require a combination of treatment strategies to target the child's psychosocial deficits, behavior problems, school difficulties, and family stress or impairment (Anastopoulos & Farley, 2003; Smith et al., 2006). For this reason, best practice treatment guidelines emphasize the importance of developing an individualized treatment plan in which the child's strengths and deficits are considered (AACAP, 2007).

Medication is a popular and well studied intervention for children and adolescents with ADHD and has been recommended as the first line of treatment for ADHD by the American Academy of Pediatrics and other organizations (AACAP, 2007; Chronis et al., 2006). Several stimulant medications (e.g., methylphenidate, dextroamphetamine, mixed salts amphetamine) have been approved by the United States Food and Drug Administration for use with children who have ADHD (AACAP, 2007; Edwards, 2002;

Faraone, 2009). Stimulant medications target symptoms of hyperactivity, impulsivity, and inattention through increasing dopamine availability in the synapses (Faraone, 2009). Studies suggest that stimulant medication is a cost-effective treatment (Pelham, Wheeler, & Chronis, 1998) with up to 85% of individuals with ADHD responding well to stimulant medication when the correct medication and dose is determined (AACAP, 2007). However, medication can have significant side effects (AACAP, 2007; Faraone, 2009; Smith et al., 2006) and only effectively reduces symptoms when the person is taking the medication (Pelham et al., 1998). In addition, negative views of medication may contribute to parents refusing to consider a medication trial or to prematurely discontinue psychopharmacological interventions for their child (Anastopoulos & Farley, 2003; Chronis et al., 2006; Taylor, O'Donoghue, & Houghton, 2006). Therefore, a variety of psychosocial interventions have been developed for ADHD.

Behavioral interventions typically aim to: (1) identify and change variables in a child's surroundings that contribute to negative behavior and (2) provide parents and teachers with more effective strategies for managing a child's difficult behavior (e.g., parent management training; AACAP, 2007; Chronis et al., 2006; Mattox & Harder, 2007; Miranda & Presentacion, 2000; Pelham et al., 1998). Numerous research studies have found that behavioral interventions are associated with a significant reduction in child ADHD symptoms in the home and school environment (Anastopoulos & Farley, 2003; DuPaul & Eckert, 1997; Edwards, 2002; Fabiano & Pelham, 2003; Pelham et al., 1998). Unlike medication, behavioral treatments are not likely to produce adverse side effects and appear to have greater long-term effects (Pelham & Fabiano,

2008). Behavioral treatments are also ideal for children who continue to exhibit symptoms when on medication as well as for families who are experiencing a great deal of stress (AACAP, 2007). Finally, parents who are reluctant to medicate their child are often attracted to behavioral approaches, and parents in general report greater satisfaction with behavioral approaches compared to medication-only approaches (Anastopoulos & Farley, 2003; Pelham, 1999; Pelham & Fabiano, 2008). However, when behavioral interventions are directly compared to medication, they not only are more costly but have also been found to produce less robust changes in behavior immediately following the intervention (MTA Cooperative Group, 1999; Pelham et al., 1998). In addition, these approaches require significant effort on the part of teachers and parents to implement them effectively and consistently (Chronis et al., 2003). Thus, treatment approaches that consist of behavioral interventions alone might not produce desired effects in all children with ADHD.

Although medication and behavioral interventions are the two most popular forms of treatment for ADHD, self-help interventions are also a popular but less studied form of treatment for ADHD. Bibliotherapy, or self-help books, aim to educate parents about the child's diagnosis and provide information about strategies parents can use in the home to manage the child's behavior and reduce family stress (Edwards, 2002; Lucker & Molloy, 1995). Parent support groups are another treatment approach and there is some evidence to suggest they are a valuable resource for parents experiencing increased stress associated with their child's behavior (Edwards, 2002). Support groups also assist parents in coping with feelings of loss and loneliness they may experience after their child is

diagnosed with the disorder (Lucker & Molloy, 1995). Although parent support groups are less prevalent than parent management training groups, one large national organization, Children and Adults with Attention Deficit Disorder (C.H.A.D.D.), offers parent support groups in numerous cities throughout the United States (Edwards, 2002). Unfortunately, parent support groups for ADHD have not yet received a great deal of attention in the empirical literature (Podolski & Nigg, 2001). However, they are likely to be an important component of treatment for various reasons discussed in the following section.

### **Parental Barriers to Treatment**

Parents are an essential part of the treatment process for their child's ADHD. Due to the fact that ADHD appears early in childhood, parents are responsible for initially bringing the child to a mental health clinic and they have decision-making power when selecting treatment approaches for the child. Parents must decide if they are comfortable with the child receiving medication and those who decide to medicate their children must attend doctor appointments and closely monitor the child's response to treatment (Chronis et al., 2006; Taylor et al., 2006). In addition, parent management training for ADHD, which is one of the most popular and effective behavioral treatments for ADHD (Anastopoulos & Farley, 2003), requires parents to participate in multiple sessions and carry out treatment strategies in the home environment. Thus, it is clear that parents are an essential part of treatment for childhood ADHD. However, several potential barriers can interfere with parent participation in treatment.



One potential barrier to successful parent participation in treatment is low knowledge about ADHD and negative cognitions about the child's behavior. Parents with limited knowledge of the causes of ADHD and the rationale behind treatment methods are less likely to enroll in treatment and more likely to prematurely drop out of treatment than parents with greater knowledge of ADHD (Corkum, Rimer, & Schachar, 1999). In addition, parents who attribute their child's hyperactive, impulsive, and inattentive behaviors to factors internal to the child might be resistant to following through with behavioral techniques such as reward systems because they believe the child is intentionally acting out and needs to be punished, not rewarded (Chronis et al., 2006). Parents who believe they have limited control over their child's behavior are also likely to believe that behavioral interventions will not be effective with their child (Harrison & Sofronoff, 2002). Thus, knowledge about ADHD and treatments for ADHD is a crucial part of parent participation in treatment.

Parents' expectations for treatment can also impact their participation in interventions. If parent expectations for treatment do not match the techniques used in the treatment approach, parents attend less frequently and are more likely to drop out of treatment (Chronis et al., 2006). Additionally, parents of children with ADHD have typically unsuccessfully attempted various behavioral techniques prior to attending treatment (e.g., timeout, reward system). Parents who have had these previous negative experiences often struggle with accepting behavioral methods in therapy and report they believe the child's behavior will not be changed through methods suggested by the

treatment provider (Smith et al., 2006). Therefore, parent beliefs about ADHD and treatment strategies can impact the parent's willingness to follow through with treatment.

Another potential barrier to parent participation in the child's treatment is parental psychopathology. Maternal ADHD, poor parental psychological adjustment, and high parenting stress are not only seen in greater levels in families of children with ADHD, but are also likely to limit the family's ability to successfully take part in behavioral treatment programs (Bussing et al., 2003; Gerdes et al., 2007; Smith et al., 2006). Studies have found that parental psychopathology, especially parental depression, is associated with poor adherence to parent training programs and poor follow-through with using behavior management techniques at home (Chronis et al., 2006; Fischer, 1990; van den Hoofdakker et al., 2010). Parents who experience high levels of depression or denial about the child's diagnosis might also be more resistant to following through with psychopharmacological interventions for their child (Taylor et al., 2006).

Although little attention has been given to parental barriers to treatment for ADHD, there is some evidence to suggest that when interventions include a component to reduce parental stress and psychopathology, higher treatment success rates are observed (Chronis et al., 2004; Gerdes et al., 2007; Kazdin & Whitley, 2003; Prinz & Miller, 1994). One study of children with aggressive behavior found that when stress management training for parents was combined with traditional behavioral treatments, barriers to treatment participation were reduced and parents and children exhibited better outcomes following treatment (Kazdin & Whitley, 2003). Another study found that parents who received supportive counseling and were provided with an opportunity to

discuss the difficulties associated with raising a child with behavior problems were more likely to remain in treatment (Prinz & Miller, 1994). For this reason, some have suggested that the first step of treatment for ADHD should include managing the parent's psychopathology and stress to best ensure that later treatment efforts are successful (Smith et al., 2006).

### **Summary**

ADHD is a relatively common childhood psychiatric disorder that is associated with various impairments and maladaptive outcomes in child and family functioning (APA, 2000; Barkley, 2003; Chronis et al., 2006; Pelham et al., 2005). Children with ADHD are at risk of experiencing dysfunction in school and academic achievement (Barkley, 2003; Pelham et al., 2005), interpersonal problems and impaired peer relationships (Brassett-Harnett & Butler, 2007; Mattox & Harder, 2007), and problems in the home environment such as high levels of family conflict (Cunningham et al., 1998). Parents of children with ADHD are also at greater risk of experiencing low parenting self-esteem and self-efficacy, less satisfaction in their role as a parent, greater parental stress, social isolation, and higher levels of depressive symptomatology (Harrison & Sofronoff, 2002; Johnston, 1996; Mash & Johnston, 1983; Whalen et al., 2006). Parenting stress and parental psychopathology are problematic not only because they negatively impact the family unit as a whole (Barkley, 2003; Fischer, 1990) but also because parents with higher levels of stress and psychopathology are less likely to engage in and more likely to prematurely drop out of interventions for their child's ADHD (Bussing et al., 2003; Friars & Mellor, 2007; Smith et al., 2006). However, when

interventions for ADHD include a component that provides parents with additional supportive counseling, parents are less likely to prematurely drop out of treatment and exhibit better treatment outcomes (Kazdin & Whitley, 2003; Prinz & Miller, 1994). Thus, it appears that parental support is an essential resource for parents of children with ADHD. This dissertation examined one potential source of support for parents: Internet support groups. In addition, the relation between participation in these groups and parenting stress and depressive symptoms was examined. However, before discussing the research questions explored in this study, it is important to describe concepts related to social support in general and support groups in particular.

### **Social Support**

Social support, which is broadly defined as social connections or resources provided by others to assist a person in coping with a stressful or difficult circumstance, is well recognized as an important component to psychological and physical health (Cohen & Wills, 1985; Coulson, 2005; Koeske & Koeske, 1990; Tanis, 2007; Thoits, 1982). People who receive greater amounts of social support experience benefits in multiple domains, including better physical health (Cohen & Wills, 1985), psychological health, and greater well-being (Tanis, 2007) than those with less support. Social support has also been found to have particular benefits for those experiencing illnesses or other significant challenges. For example, people with physical health ailments who receive higher levels of social support have been found to have improved recovery and greater survival time than those with less social support (Coulson, 2005). In addition, social support is beneficial to those experiencing mental health problems and is associated with

reductions in symptoms and more adaptive coping (Bruwer & Stein, 2005; Buchanan & Coulson, 2007; Lamberg, 2003). Thus, social support is valuable to everyone, but especially to those experiencing difficulties or significant stressors.

The buffering hypothesis proposes that social support protects (or buffers) an individual from possible negative effects associated with encountering stressful life events (Alloway & Bebbington, 1987; Cohen & Wills, 1985; Thoits, 1982). Although there is some debate as to how social support positively impacts one's health, it is clear that when encountering life stressors, those with greater social support fare better than those with less support (Alloway & Bebbington, 1987; Barrera, 1986). In addition, research has found that social support is beneficial to parents who experience increased caretaking demands and parenting stress associated with raising a child with challenging behavior (Koeske & Koeske, 1990; Suarez & Baker, 1997), which was one area of inquiry in the current study.

### **Definitions of Social Support Concepts**

The term *social support* is used to describe a wide variety of concepts and actions. In fact, the social support literature has been criticized by some who argue that researchers use the term too vaguely and fail to define constructs related to social support (Barrera, 1986). This is problematic because it can lead to confusion in the research literature and conflicting results. Indicators of social support (i.e., enacted support, perceived support) and types of support (i.e., practical, emotional) that were examined in this study are described below.

**Indicators of social support.** When social support is discussed in the literature, the term is typically used to refer to social communication, interactions, or behaviors intended to provide assistance to a person (Goodwin, Costa, & Adonu, 2004). However, many social support researchers have argued that the benefits of social support might not only be derived from the action of reaching out and receiving support but also from the perceived helpfulness of such actions (Barerra, 1986; Lakey & Cassady, 1990; Cohen, Lakey, Tiell, & Neely, 2005). Thus, it is important to differentiate between these two indicators of support.

Enacted support refers to the actual interactions or behaviors received by those seeking support from others who are providing support (Barerra, 1986; Goodwin et al., 2004). Examples of enacted support include receiving help with childcare or transportation, being given information about a disease or treatment option, or having the opportunity to discuss one's concerns with another person (Koeske & Koeske, 1990). Social support measures typically assess the frequency with which people report receiving enacted support and most researchers hypothesize that greater levels of enacted support will be related to positive psychological outcomes (Lakey & Cassady, 1990). However, previous research has often failed to find a relation between enacted support and positive outcomes and some studies have even found that higher rates of enacted support are related to greater psychological distress (Barerra, 1986). Thus, other indicators of support have been examined to better understand this phenomenon.

Perceived social support is another indicator of social support and refers to the cognitive appraisals made by the person receiving support about the availability and

helpfulness of those providing support (Barerra, 1986). In other words, perceived support refers to one's beliefs about the usefulness of enacted support. Research has found that measures of perceived support often correlate poorly with measures of enacted support, suggesting they are two distinct constructs (Goodwin et al., 2004; Lakey & Cassady, 1990). In addition, perceived support has been found to be related to positive psychological outcomes such that people who report being satisfied with the support they receive also report fewer depressive symptoms and less overall psychological distress (Barerra, 1986). Therefore, a person's appraisal of the helpfulness of support is likely to be related to the impact receiving that support has on their psychological functioning.

Due to the fact that there are important distinctions between enacted and perceived support and these indicators of support may be related to different psychological outcomes (Barerra, 1986), the measure of social support used in this study assessed both enacted and perceived support. In addition, these indicators of support were examined separately in analyses.

**Types of social support.** Although several types of social support have been identified in the literature (Cutrona & Suhr, 1992), they can broadly be categorized in two domains: practical and emotional support (Alloway & Bebbington, 1987). Much like with indicators of support, there is some evidence to suggest that the type of social support received could be associated with different outcomes.

Practical forms of support refer to instrumental resources intended to help a person cope or manage a difficult situation and include tangible and informational support. Tangible support serves the purpose of assisting a person in navigating through

day-to-day life and includes actions such as providing transportation to an appointment, running errands, or loaning money to cover medical bills (Coulson, 2005; Tanis, 2007). Informational support consists of providing guidance or factual information about a topic such as referral information for healthcare providers or services, treatment advice, the name of a book or organization, or knowledge about research advances (Coulson, 2005). Practical support is valuable because it can help a person consider more adaptive reactions or solutions to the problem causing stress, which reduces the negative impact of the stressful event (Cohen & Wills, 1985; Koeske & Koeske, 1990). Practical support can also expand a person's understanding of a topic or disease which thereby reduces one's uncertainty and fear and leads to a greater sense of control over a situation (Solomon, Pistrang, & Barker, 2001; Tanis, 2007). Thus, practical support is especially valuable when a person is first learning about the stressor or illness being experienced (Solomon et al., 2001).

Emotional support is intended to provide comfort in the midst of a difficult situation and refers to the expression of empathy or compassion toward others (Coulson, 2005; Cutrona & Suhr, 1992). This typically takes the form of someone listening to another person vent his or her frustrations and feelings about challenging life events. Emotional support is valuable because it provides an opportunity to share one's thoughts and feelings which in turn shows a person that others care and are willing to listen (Solomon et al., 2001; Tanis, 2007). Emotional support can also help reframe a stressful event so that the individual views the event in a less destructive or catastrophic manner (Alloway & Bebbington, 1987; Cohen & Wills, 1985). For example, parents of children



with difficult behavior might begin to view the child's behavior as less overwhelming and more within the parent's control, thereby decreasing the parent's stress reaction (Koeske & Koeske, 1990). Finally, encouraging or positive statements and compliments can build one's self-esteem and bring about a sense of hope and optimism (Coulson, 2005). The measure of social support included in the current study assessed both practical and emotional support received by parents to capture the range of supportive actions they received from the Internet support group.

People typically seek support from individuals close to them such as a spouse, relatives, close friends, or coworkers (Alloway & Bebbington, 1987; Barrera, 1986; Cutrona & Suhr, 1992). Although many find the support they receive from family and friends adequately meets their needs, some individuals seek additional support from more formalized sources, such as a support group.

### **Support Groups**

Support groups take many forms, but they typically consist of individuals experiencing similar stressful life events (e.g., physical or mental illness, loss of a loved one) who gather to discuss their personal experiences and provide social support to other members of the group (Perron, 2002; Schopler & Galinsky, 1993). Support groups grew out of the self-help movement and the belief that people experiencing similar circumstances can support and assist each other in ways that cannot be done in other therapeutic modalities (Davison, Pennebaker, & Dickerson, 2000; Heller, Roccoforte, & Cook, 1997). Although some groups are created and led by mental health professionals,

many are facilitated and maintained by members of the group who assume a leadership role (Cook, Heller, & Pickett-Schenk, 1999; Schopler & Galinsky, 1993).

Just as there are different types of social support, there are unique coping resources provided by support groups. Emotional support is one of the primary resources provided to group members. Members of a support group are afforded an opportunity to share their story and receive validation of their concerns from other group members which in turn reduces social isolation, stress, and feelings of guilt or shame (Cook et al., 1999; Heller et al., 1997). The simple act of sharing one's personal stories with others who have had similar life experiences can be cathartic and help people cope with stress (Perron, 2002). Group members are also provided with practical support. For example, group members often share information about referral sources and services, advances in research, and psychoeducational information about the causes, symptoms, and available treatments for the illness (Cook et al., 1999; Heller et al., 1997; Schopler & Galinsky, 1993). In addition, group members typically share coping resources and problem solving strategies which assists members in managing stressful events outside of the group (Schopler & Galinsky, 1993).

Support groups typically take place outside of traditional mental health clinics and often do not include mental health professionals. Thus, the research literature regarding support groups is limited and there is not a great understanding of the demographic background of people who participate in support groups, the factors that motivate people to join support groups, or outcomes associated with participation in support groups (Davison et al., 2000; Heller et al., 1997). However, the current body of research suggests

that support groups are beneficial and provide participants with a place to openly share their feelings and feel accepted and supported by others, which in turn assists group members with adaptively coping with stressful life events (Cook et al., 1999; Schopler & Galinsky, 1993; Solomon, et al., 2001; van Kraayenoord, 2002). In addition, research on support groups for individuals with physical illnesses (e.g., cancer) or chronic health conditions (e.g., diabetes) has found that those who participate in illness support groups exhibit better adjustment to the diagnosis, improved symptoms, shorter recovery times, and greater survival time (Coulson, 2005). Thus, it appears that there are many benefits to participation in support groups.

Although support groups for parents of children with disabilities in general, and ADHD in particular, have not received a great deal of attention in the empirical literature (Podolski & Nigg, 2001), there is some evidence to suggest that parents benefit from their participation in support groups. Parent support groups provide parents with the opportunity to converse with others experiencing similar challenges and help parents who have become isolated see they are not the only parent experiencing difficulties with their child (Solomon et al., 2001; van Kraayenoord, 2002). In addition, parent support groups can empower parents and increase a parent's sense of self-efficacy and competence in the parenting role (Shechtman & Gilat, 2005; Singh & Curtis, 1997). Participation in support groups for parents of children with disabilities is also associated with enhanced active coping with stressors, increased hope and positive thinking, and decreased feelings of stress and depression (Shapiro, 1989; Solomon et al., 2001). Finally, participation in support groups for parents of adult offspring with severe mental illness is associated with

reduced feelings of isolation, improved knowledge about available resources, and improved coping with the challenges associated with caring for a person with a mental illness (Biegel, Shafran, & Johnsen, 2004; Cook et al., 1999). Therefore, it appears that support groups can be beneficial not only to individuals directly affected by an illness, but also to those caring for them.

### **Summary**

Social support is important to psychological and physical health and is especially valuable to individuals experiencing stress (Cohen & Wills, 1985; Coulson, 2005; Koeske & Koeske, 1990; Tanis, 2007; Thoits, 1982). The term social support is often used to refer to a variety of behaviors and actions; therefore it is important to distinguish between different indicators and types of support. Two indicators of support are enacted support and perceived support, which refers to actual interactions or supportive behaviors (Barerra, 1986; Goodwin et al., 2004) and cognitive appraisals about the availability and helpfulness of those providing support (Barerra, 1986; Lakey & Cassady, 1990), respectively. On the other hand, emotional and practical support represent two general types of social support. Emotional support is defined as the expression of empathy and compassion toward others (Alloway & Bebbington, 1987; Coulson, 2005; Solomon et al., 2007), whereas practical support refers to helpful actions (e.g., transportation to an appointment), guidance, or receiving factual information (Cutrona & Suhr, 1992; Tanis, 2007). Although people typically seek and receive social support from family members or close friends (Alloway & Bebbington, 1987; Cutrona & Suhr, 1992), support groups also provide an opportunity to gain social support. Support groups grew out of the self-

help movement and typically are comprised of individuals experiencing similar stressful life events who gather to discuss their personal experiences and provide social support to members of the group (Heller et al., 1997; Perron, 2002; Schopler & Galinsky, 1993). Although participation in support groups has been found to be associated with positive psychosocial outcomes such as increased self-esteem, decreased social isolation, and adaptive coping (Biegel et al., 2004; Cook et al., 1999; Solomon et al., 2001), support groups might not be accessible to some individuals for a variety of reasons. Thus, Internet support groups have become an attractive alternative to traditional face-to-face support groups. Support groups on the Internet, which were the focus of this study, are discussed in the next section of the literature review.

### **Support Groups on the Internet**

In the past few decades, use of the Internet has grown exponentially. Two areas of Internet use that have grown in particular are use of the Internet to acquire health information and use of the Internet to interact with others in online groups and social networking sites (Buchanan & Coulson, 2007). Internet support groups for individuals with physical or mental illness represent an intersection of these two areas of Internet usage and have become a popular area of research over the past two decades (Davison et al., 2000; Kral, 2006). This section of the literature review describes: (1) Internet support groups, (2) characteristics of members of online support groups, (3) research on the effectiveness of Internet support groups, and (4) potential problems with Internet support groups.

### **What is an Internet Support Group?**

Every day, millions of people use the Internet to search for health information (Buchanan & Couslon, 2007; Kral, 2006) and approximately one in five Internet users in the United States report they have searched for information about mental health issues using the Internet (Lamberg, 2003). In the past several years, people have also begun to form social networks and relationships online. This has contributed to the formation of hundreds of Internet groups in which people with common physical or mental health problems gather online to interact, share information, and read and post messages to group members (Eysenbach et al., 2004; Perron, 2002). With just a computer and connection to the Internet, individuals around the world can access an online support group at any time and from any location (Buchanan & Coulson, 2007; Coulson, 2005). Thus, Internet support groups are a convenient way for individuals to connect with others experiencing similar difficulties (Kral, 2006).

The majority of online groups have been founded by an individual experiencing the affliction that is the focus of the group or by an organization associated with the illness (e.g., Autism Speaks, National Alliance for the Mentally Ill; Garbe, 2008; Lamberg, 2003). Although some groups are moderated by professionals, the majority of groups are run by group members who assume leadership roles (Garbe, 2008; Madara, 1997; Tanis, 2007). Unfortunately, little is known about the demographic characteristics of people who participate in Internet support groups (Darcy & Dooley, 2007). However, due to the fact that many individuals around the world have access to the Internet (Constant, Sproull, & Kiesler, 1996) and online groups are typically open to anyone

interested in joining the group (Kral, 2006), it has been hypothesized that Internet support groups are likely to attract a wide range of individuals (Coulson, 2005).

Communication in Internet support groups typically consists of email communication or messages posted by members on online message boards or discussion forums (Tanis, 2007). Although some groups have technology that allows for live communication between group members (Perron, 2002), most groups use email or message boards that can be accessed by members at all hours of the day (Lamberg, 2003). This allows people to search through previous postings and read only those messages that interest them. It also provides an opportunity for individuals to use the group to access information without actively participating in or contributing to the group (Tanis, 2007). Message posts tend to be quite varied and include personal stories, recommendations of clinicians or treatment facilities, personal experiences with different treatment techniques, reviews of research findings, and encouragement to members experiencing hardship (Lamberg, 2003; Mendelson, 2003; Perron, 2002).

### **Benefits of Internet Support Groups**

People choose to participate in Internet support groups for a variety of reasons and previous research has found these groups have certain advantages over traditional face-to-face support groups. Benefits of Internet support groups that are described in the following section include: (1) accessibility of groups, (2) anonymity provided on the Internet, (3) the opportunity to connect with others, and (4) the use of Internet support groups as a treatment source.

**Accessibility.** One benefit unique to Internet support groups is the constant accessibility of the group. Whereas face-to-face groups meet at a specific time and location, members of Internet groups are not presented with these logistical barriers and can access the group at any time and from any location provided they have a computer and Internet access (Barnett & Hwang, 2006; Coulson, 2005; Mendelson, 2003; Stein, 1997). In other words, individuals can access the group when convenient or when support is needed. Individuals who live in areas that do not have community resources available are also able to connect to others and seek out advice and support (Lamberg, 2003). In addition, individuals who have a difficult time leaving their home due to physical limitations or caregiving responsibilities are able to participate in online groups (Madara, 1997). Finally, due to the fact that Internet support groups are characterized by text-based interactions, individuals are able to look through previous messages or post questions and responses at any time (Tanis, 2007). For these reasons, it is clear that Internet support groups are more easily accessible than face-to-face groups for most people.

**Anonymity.** The anonymity afforded on the Internet is another unique characteristic of Internet support groups. Individuals report feeling more comfortable interacting on the Internet because messages are typically free from identifying information or cues about one's physical or social status (Coulson, 2005; Madara, 1997). In addition, people who experience anxiety in social situations might feel more at ease participating in an online group as opposed to a face-to-face group (McKenna, 2008). Anonymity may also help people who are embarrassed by their questions or uncomfortable with disclosing personal information in face-to-face circumstances feel



more comfortable asking questions and self-disclosing online (Buchanan & Coulson, 2007; Darcy & Dooley, 2007; Davison et al., 2000; Lamberg, 2003). In fact, research has found high levels of self-disclosure in Internet support groups (Tanis, 2007). Therefore, anonymity is an appealing aspect of Internet support groups for many individuals.

**Connecting with others.** Internet support groups provide members with a place to share their feelings and gain practical and emotional support. Participants in Internet support groups often report their primary reasons for joining the group were to: (1) obtain information about the symptoms, causes, and treatment techniques for the physical or mental health affliction that is the focus of the group and (2) to connect with others dealing with similar difficulties (Buchanan & Coulson, 2007; Coulson, 2005; Garbe, 2008; Tanis, 2007). Group members also report they appreciate the opportunity to interact with people experiencing the same physical or mental illness as themselves (Bruwer & Stein, 2005; Mendelson, 2003). In particular, individuals who feel isolated or ashamed by their situation benefit from the opportunity to share their struggles and often report feeling relieved, reassured, hopeful, and empowered after interacting with others and recognizing they are not alone (Buchanan & Coulson, 2007; McKenna, 2008; Stein, 1997). In addition, individuals who are socially isolated benefit from communicating with others online (LaRose, Eastin, & Gregg, 2001).

People are also drawn to Internet support groups when they lack adequate support from traditional face-to-face supports such as family and close friends (Constant et al., 1996; McKenna, 2008). For example, a study of women with breast cancer found those who were less satisfied with their face-to-face sources of support were more likely to

seek social support on the Internet (Winefield, Coventry, Pradhan, Harvey, & Lambert, 2003). In addition, a study of online support for individuals with trichotillomania found that many group members reported they did not discuss their symptoms with family or friends (Bruwer & Stein, 2005). Thus, people who do not receive adequate support from family and friends may be more likely to join an Internet support group in an effort to obtain the support they need.

Internet support group members also might benefit from having the opportunity to share information with others and take on the role of a helper. Group members are able to share their past successes and failures with others and can help individuals who are dealing with a challenge they overcame in the past (Madara, 1997). The opportunity to help another person experiencing a similar problem might in turn contribute to greater feelings of self-confidence and self-esteem for the person in the helping role (Constant et al., 1996; Solomon et al., 2001). In other words, group members not only benefit from the support they receive but also from the support and guidance they provide to others in the group.

**Treatment source.** Internet support groups might also be appealing to people not currently seeking traditional forms of treatment such as medication or psychotherapy. One study of online support groups for individuals with trichotillomania found that many group members had either never received treatment from a mental health professional or had previously but were not currently receiving professional services (Bruwer & Stein, 2005). Studies of eating disorder Internet support groups have also found that despite the fact that the majority of participants reported clinical levels of symptoms, most had never

been involved in treatment or were not currently receiving professional treatment (Darcy & Dooley, 2007; Kral, 2006). However, it is important to note that some research has found conflicting information. For example, one study of an Internet support group for individuals with mood disorders found that almost all participants were involved in professional services and even discussed their experiences in the online group with their mental health provider (Lamberg, 2003). Thus, it is possible that participation in professional services or treatment may vary based on illness or the specific Internet support group in which a person participates.

Although it is somewhat concerning that many individuals in Internet support groups have not yet sought professional treatment, it also can be viewed in a positive light. First, it is likely that the group is valuable to these individuals given they are receiving no other intervention for their illness (Kral, 2006). Second, there is some evidence to suggest that Internet support groups might help people overcome negative feelings about their illness which in turn motivates them to seek professional support. For example, a study of an online dental anxiety support group found that although the majority of individuals had yet to seek professional treatment when they first joined the group, many reported participation in the group empowered them to enter treatment and overcome their anxiety (Buchanan & Coulson, 2007). This same pattern has been found in online groups for depression and eating disorders in which participants in online groups reported the group helped reduce shame around their disorder which helped them seek professional treatment (Darcy & Dooley, 2007). In addition, participants who accessed an Internet mood disorder support group at higher levels were more likely to

stay in treatment and be active in their care than lower level users (Lamberg, 2003).

Therefore, Internet support groups may help destigmatize treatment and motivate users to seek professional care.

### **Potential Problems with Internet Support Groups**

Although there are many benefits associated with participation in an Internet support group, participants may also encounter negative or even harmful situations. Potential problems with Internet support groups discussed below include: (1) problems with technology and miscommunication, (2) false information, (3) withdrawal from face-to-face supports, and (4) Internet bullying and hoaxes.

**Technology and miscommunication.** Due to the fact that the primary method of communication in an online group is text-based interactions on the Internet, problems with technology glitches and miscommunication sometimes occur. Some problems are related to technical glitches such as message threads disappearing (Bruwer & Stein, 2005). Additional problems are related to the process of communication. On the Internet, typical social communication cues such as facial expressions, body language, and verbal tone are absent (Buchanan & Coulson, 2007; Kral, 2006). This can lead to miscommunication and might limit the development of an emotional bond with other group members (Buchanan & Coulson, 2007; Stein, 1997). Miscommunication can also lead to misunderstanding, bickering, and arguments between group members which might contribute to some individuals withdrawing from the group (Garbe, 2008).

**False information.** Although members of Internet support groups are linked to a large group of people who provide advice and information related to a particular problem,

it does not necessarily mean the information provided is reliable or accurate (Constant et al., 1996). For example, previous research suggests that the quality of information found on the Internet about various mental health problems is poor, fails to recommend that the reader should consult with a professional, and often neglects to provide recommendations for evidence-based treatment (Kisely, Ong, & Takyar, 2003). In addition, marketers of treatment products could access groups and exploit members to invest in a treatment that has no evidence base (Lamberg, 2003). Although there is evidence to suggest group members quickly correct misinformation when it is posted in an Internet group, the scientific rigor of information or research presented in groups is unknown (Tanis, 2007). Thus, it is possible that participants in Internet support groups receive false or misguided information which could have a negative impact.

**Withdrawal from face-to-face supports.** Another potential problem with Internet support groups is that those who spend a significant amount of time participating in the group might withdraw from face-to-face social supports. The Internet paradox theory asserts that those who use the Internet with greater frequency will become socially isolated from relatives and friends which can lead to negative psychological outcomes such as depression (Kraut, Patterson, Lundmark, Kiesler, Mukopadhyay, & Scherlis, 1998). This could especially be true when people replace strong, supportive face-to-face relationships with superficial or weak online relationships (Kraut, Kiesler, Boneva, Cummings, Helgeson, & Crawford, 2002).

Early research suggested greater Internet use was associated with decreased contact with family and friends and increased loneliness, depression, and daily life

stressors (Kraut et al., 1998). However, later studies found that this is not typical or might be true for only select groups of people. For example, one study found that people who scored high on extraversion reported greater involvement with community supports and lower loneliness with greater Internet use, whereas people who scored high on introversion reported less involvement with community supports and greater loneliness with increased Internet use (Kraut et al., 2002). In addition, individuals who have used the Internet for longer periods of time report greater and higher quality social interactions online when compared to those who are newer users of the Internet (LaRose et al., 2001). Finally, research focusing specifically on participants in Internet support groups has yet to support the Internet paradox theory (Lamberg, 2003). Thus, although it is possible that some individuals who participate in Internet support groups are at risk of withdrawing from face-to-face supports, it is not likely that this is a widespread problem.

**Internet bullying and hoaxes.** Although there are some minor hassles associated with participation in Internet support groups, there are also more significant risks associated with these groups. One example is negative and aggressive interactions between group members (Bruwer & Stein, 2005). Just as anonymity might help people feel more comfortable with self-disclosing information, it also might lead to less inhibition and greater bullying or hostile behavior (Coulson, 2005; Madara, 1997). In fact, many members of Internet support groups complain about hostile, whining, or negative members who disrupt the group (Garbe, 2008; Lamberg, 2003).

In addition, because there are few rules governing who is able to join an Internet support group, there is fear that individuals who do not have the illness might join and

pretend to have similar problems to group members (Darcy & Dooley, 2007). In one case, a man joined an Internet support group for depression and threatened to kill himself, then returned later posing as the individuals' son and claiming that the group was responsible for his father's suicide. This led to several group members becoming very upset and suicidal themselves (Lamberg, 2003). Although this is an extreme case, the lack of rules governing Internet support groups could lead to similar, less extreme instances of malicious individuals joining an Internet support group and purposely creating negative situations.

### **Summary**

The use of the Internet to acquire health information and interact with others through social networks has increased dramatically over the past few decades (Buchanan & Coulson, 2007). Numerous support groups comprised of people experiencing similar physical and mental illnesses have been formed and provide countless individuals with a forum to interact with each other and share experiences and information (Kral, 2006). Internet support groups have many appealing features such as anonymity, (McKenna, 2008), ability to access the group at one's own convenience (Barnett & Hwang, 2006; Coulson, 2005; Mendelson, 2003; Stein, 1997), and the opportunity to connect with others experiencing similar challenges (Buchanan & Coulson, 2007; Coulson, 2005; Garbe, 2008; Tanis, 2007). In addition, participation in an Internet support group might reduce stigma about mental health treatment and encourage some individuals to seek professional treatment for their condition (Buchanan & Coulson, 2007; Darcy & Dooley, 2007). However, although there are many potential benefits to participation in Internet

support groups, problems and negative experiences are also possible. Miscommunication, false information, bullying, and hoaxes can occur in Internet support groups and may contribute to negative experiences or stress for group members (Bruwer & Stein, 2005; Coulson, 2005; Madara, 1997). Some research also suggests individuals might withdraw from face-to-face supports as they spend more time interacting with others on the Internet (Kraut et al., 1998; 2002), although other research has not yielded similar results (Lamberg, 2003). Due to the fact that Internet support groups are a relatively new area of research, there is a need to better examine the experiences and psychosocial outcomes of participants in these groups. In particular, Internet support groups for parents of children with ADHD, which are the focus of the current study, have yet to receive attention. The next section of the literature review discusses limitations of previous research in this area of study.

### **Limitations of Previous Research**

This study examined Internet support groups for parents of children with ADHD. Although there is a wealth of information on treatments for ADHD (AACAP, 2007; Barkley, 2003; Chronis et al., 2006; Edwards, 2002; Faraone, 2009; Mattox & Harder, 2007; Pelham et al., 1998), parental stress associated with parenting a child with ADHD (Barkley, 2003; Cunningham et al., 1988; Fischer, 1990; Johnston, 1996; Whalen et al., 2006), and the impact of Internet support groups (Buchanan & Coulson, 2007; Kral, 2006; Lamberg, 2003; Perron, 2002; Tanis, 2007), the current literature is limited in several ways. Limitations of previous research include a lack of research on: (1) the impact of social support on the adjustment of parents of children with ADHD,



(2) outcome research examining the impact of Internet support groups, (3) Internet support groups for parents, and (4) risks of Internet support groups.

### **ADHD and Parent Support**

Parents of children with ADHD experience greater levels of stress than parents who do not have a child with ADHD (Barkley, 2003; Harrison & Sofronoff, 2002; Mash & Johnston, 1983). In addition, it appears that social support positively impacts a parent's ability to cope with the stressors associated with raising a child with ADHD (Johnston, 1996; Podolski & Nigg, 2001; Singh & Curtis, 1997). However, parents of children with ADHD might have greater difficulty accessing traditional sources of social support, such as friends, neighbors, and extended family members, due to the increased demands associated with raising a child with ADHD (Cunningham et al., 1988). Thus, support groups could be beneficial to parents of children with ADHD.

Parents of children with ADHD report greater social isolation and higher levels of stress and depression than parents of children who do not have ADHD (Baker, 1994; Mash & Johnston, 1990). In addition, parents of children with ADHD report they not only have less contact with their extended family members, but they also perceive those family members as being less helpful (Cunningham et al., 1988). The relation between stress and social isolation in parents of children with ADHD is problematic because parents who experience high levels of stress and social isolation are at greater risk for experiencing depression, self-blame, a sense of incompetence as a parent, and feel less attached to their child (Cunningham et al., 1988; Fischer, 1990; Mash & Johnston, 1983). In addition, social isolation may impact the way the parent views the child. For example,

one study found that mothers of children with ADHD who reported poor relationships with extended family members also reported their child's behavior to be more difficult than mothers of children with ADHD who had good relationships with extended family members (Cunningham et al., 1988). Therefore, parents who are isolated from close friends and extended family members might benefit from seeking outside sources of support, such as a parent support group. However, despite the fact that many researchers recognize the need for interventions that aim to increase parent social support (Fischer, 1990; van Kraayenoord, 2002; Vitanza & Guarnaccia, 1999), there is a lack of empirical research on parent support groups. In addition, the limited research that has been conducted has typically included children with varying disabilities and has not exclusively focused on parents of children with ADHD (Shapiro, 1989; Shechtman & Gilat, 2005; Singh & Curtis, 1997; Solomon et al., 2001). Thus, this dissertation examined the extent to which participation in Internet support groups meets the social support needs of parents of children with ADHD and the impact this has on parents' experience of stress and depressive symptoms.

### **Impact of Internet Support Groups**

Research on Internet support groups to date has often been exploratory and few studies have examined psychosocial outcomes associated with participation in Internet support groups (Eysenbach et al., 2004; Tanis, 2007). For example, a great deal of research has focused on analysis of the content of discussions that take place in Internet groups (e.g., Barnett & Hwang, 2006; Coulson, 2005; Mendelson, 2003; Perron, 2002). In addition, many studies have used qualitative research methods to explore participant's

beliefs about the benefits and drawbacks of Internet support groups (e.g., Bruwer & Stein, 2005; Eysenbach et al., 2004). Finally, although some research has examined the clinical characteristics of participants in online support groups (e.g., symptom levels, duration of diagnosis, time spent in therapy; Darcy & Dooley, 2007; Kral, 2006; Stein, 1997), these studies have typically been descriptive in nature and have neglected to examine the relation between participation in the group and psychosocial outcomes. Although exploratory and descriptive research provides valuable information, it is clear that more research examining psychosocial outcomes is needed to better understand the impact participation in Internet support groups has on the psychological functioning of participants.

The limited outcome research that has been conducted on Internet support groups has yielded mixed results. One review of Internet support groups for a variety of health concerns found three out of twelve studies reported participation in the group was associated with statistically significant improvements in depression scores and only five out of twelve studies reported significant effects on social support measures (Eysenbach et al., 2004). However, Eysenbach and colleagues (2004) noted that many of the studies had small sample sizes, high dropout rates, and lacked adequate statistical power to detect effects. Thus, it is unclear if Internet support groups actually benefit participants and more research is needed to better understand the psychosocial outcomes associated with participation in Internet support groups (Tanis, 2007). In an effort to address this gap in the literature, this dissertation utilized measures of social support, parenting stress, and

depressive symptoms to examine the relation between participation in an Internet support group and parent functioning.

### **Internet Support Groups for Parents**

Very few studies have examined Internet support groups for parents of children with developmental or behavioral problems. Although it is likely that Internet groups can be valuable to caregivers, family members, and friends (Bruwer & Stein, 2005; Tanis, 2007; Winefield et al., 2003), previous research has typically focused on groups for individuals directly experiencing the illness. It is important to better understand the impact of Internet support groups for parents of children with disabilities such as ADHD because these parents represent an especially vulnerable population who might have difficulty accessing traditional support services (Cunningham et al., 1988).

As discussed earlier, previous research on face-to-face groups has found that support groups for parents of children with disabilities assist parents in coping with stressors associated with caregiving, provide parents with an opportunity to connect to others, and decrease feelings of depression (Shapiro, 1989; Solomon et al., 2001). Unfortunately, various barriers may prevent a parent from attending a face-to-face support group (Heller et al., 1997). For example, one study of caregivers of adult family members with a mental illness found that although caregivers reported a great need for support, access barriers (e.g., lack of time to attend, lack of someone to care for children, transportation difficulties) prevented many individuals from attending support groups (Biegel et al., 2004). Internet support groups are not associated with such barriers, making them a potentially valuable resource to parents.

Internet support groups may be especially helpful for parents of children with ADHD. As discussed earlier, parents of children with ADHD report greater social isolation than parents of typically developing children (Baker, 1994). It has been hypothesized that this is due to the fact that disruptive child behavior interrupts interactions with friends or relatives which might lead to feelings of embarrassment and contribute to parents avoiding interactions with others (Cunningham et al., 1998). Thus, it is possible that parents who have become isolated from face-to-face sources of support would benefit from online sources of social support.

Another important area of inquiry is the possibility that participation in an Internet support group might reduce barriers associated with parents seeking professional services for their child (Kral, 2006). In the United States, it is estimated that seventy-five percent of children with a mental illness are not receiving adequate treatment (Huang, Stroul, Friedman, Mrazek, Friesen, Pires, & Mayberg, 2005). Parents are largely responsible for seeking out and participating in services for their child. However, previous research has found that parents experiencing greater levels of stress and psychopathology are less likely to seek treatment for their child and more likely to prematurely drop out of treatment (Chronis et al., 2006; Fischer, 1990; Friars & Mellor, 2007). To address this research question, different profiles of treatment utilization among group members were explored in the current study.

### **Risks of Internet Support Groups**

Potential risks associated with participation in support groups have not been well studied. Some have hypothesized that participation in face-to-face support groups could

be perceived as threatening or embarrassing by some individuals which could actually increase stress instead of reduce it (Schopler & Galinsky, 1993). It is unknown if a similar phenomenon occurs in Internet support groups, but due to the anonymity afforded online, it seems unlikely. However, some have hypothesized that anonymity on the Internet could be associated with other negative experiences such as bullying, threats, hoaxes, or breaches of privacy, although these fears have yet to be substantiated by empirical research (Darcy & Dooley, 2007; Eysenbach et al., 2004). Therefore, this study examined negative experiences encountered by parents to better understand risks that may be associated with participation in an Internet support group.

### **Aims and Research Questions**

The aims of this dissertation were to better understand the: (1) characteristics of parents who join Internet support groups for parents of children with ADHD, (2) experiences these parents have online, (3) impact of social support on parent functioning, and (4) psychosocial outcomes associated with participation in an Internet support group. This study appears to be the first to examine Internet support groups for parents of children with ADHD, making it a valuable contribution to the literature.

Due to the fact that there is not a large body of empirical research that has examined Internet support groups for parents, this study aimed to better understand participants in these groups. Although a priori hypotheses were not proposed for the following research questions, they explored important issues that have yet to receive attention in empirical research.

## Research Question 1

**What are the demographic characteristics of participants in Internet support groups for parents of children with ADHD?** Previous research has largely neglected to examine the demographic characteristics of participants in Internet support groups (Coulson, 2005; Winefield et al., 2003) and outcome research has rarely investigated outcomes for different groups of individuals (Eysenbach et al., 2004; Tanis, 2007). However, there is some research to suggest females are more likely to seek social support when encountering a stressor, use the Internet to search for health information more frequently (Buchanan & Coulson, 2007), and are more likely to join an Internet support group (Perron, 2002). In addition, one study of Internet support groups for mothers of children with autism found the majority of mothers in the group were older, well educated, and from high socioeconomic backgrounds (Garbe, 2008). On the other hand, there is evidence to suggest social support is especially important for those with lower levels of education, low socioeconomic status, and single mothers who do not have the support of a spouse or partner (Floyd & Gallagher, 1997; Suarez & Baker, 1997). Thus, it is unknown if Internet support groups attract a wide variety of individuals or participants from relatively homogeneous backgrounds. However, it is important to better understand the background of individuals who join Internet support groups because it could have important implications for future research (e.g., which individuals should be targeted for Internet support groups; which individuals might benefit from participation in an Internet support group).

Comprehensive demographic information was collected from parents in this study to better understand the characteristics of participants in Internet support groups for parents of children with ADHD. In addition, correlations between the demographic, independent, and dependent variables were conducted to explore the degree to which these variables were related. Finally, to compare the extent to which this sample was similar to or different from previous samples, the mean scores obtained on measures of parental stress and parental depressive symptoms in this study were compared to the mean scores obtained in previous research with parents of children with ADHD.

### **Research Question 2**

**What motivates parents to join an Internet support group?** The factors that contribute to an individual joining an Internet support group are poorly understood (Tanis, 2007). However, it is important to determine what motivates individuals to join online groups because these motivating factors could impact the person's experience in the group (McKenna, 2008). In addition, a greater understanding of these variables could provide referral sources with information about the parents who may be good candidates for an Internet support group. Therefore, this study asked participants to indicate reasons they initially joined the group as well as reasons they joined an Internet support group as opposed to a face-to-face support group. Participants were asked to select from a list of responses developed based on previous research (Appendix B). In addition, participants were provided with the opportunity to write in responses to capture any factors unique to parent support groups for ADHD.



### **Research Question 3**

**Is participation in Internet support groups associated with adverse experiences?** Although many have hypothesized that Internet support groups could be harmful due to bullying, intimidation, false information, or hoaxes, there is limited empirical evidence to support these claims (Darcy & Dooley, 2007; Eysenbach et al., 2004; Schopler & Galinsky, 1993). However, there is some evidence to suggest parents can have negative experiences with other group members. For example, one study of Internet support groups for parents of children with autism found that high numbers of parents reported dissatisfaction with members who fought, whined, and were overly opinionated and inflexible (Garbe, 2008). Therefore, although Internet support groups may be easily accessible and appealing to people, it is also possible that group processes could interfere with the satisfaction of group members, and thus the potential benefits gained from the group. This study asked parents about negative experiences they encountered to better understand potential drawbacks associated with participation in an online group. Based on previous research on Internet support groups, a list of possible negative events was developed and parents were asked to rate the frequency with which they experienced the events (see Appendix B). In addition, parents were provided the opportunity to write in responses to capture negative experiences unique to groups for this population.

### **Research Question 4**

**Do participants in Internet support groups also receive traditional mental health services?** Previous research has not adequately examined the extent to which

participants in Internet support groups utilize face-to-face supports and treatment resources provided by professionals (Eysenbach et al., 2004). There are various treatments such as medication, behavioral therapy, and school interventions that have been shown to effectively reduce symptoms associated with ADHD (AACAP, 2007; Barkley, 2003; Chronis et al., 2006; Edwards, 2002; Faraone, 2009; Mattox & Harder, 2007; Pelham et al., 1998). However, it is unknown if support group participants utilize these treatments as a contemporaneous counterpart to Internet support groups, if parents utilize the support group as a substitute for traditional treatment options, or if some parents use Internet support groups as a gateway to more traditional interventions (e.g., medication, behavioral interventions). Thus, this study sought to identify various treatment use typologies, the frequencies with which they occurred, and possible differences in parent functioning between treatment typologies.

### **Hypotheses**

In addition to the research questions presented above, this study examined several hypotheses to better understand the relation between child ADHD symptoms, participation in an Internet support group, and parent outcomes (parenting stress and depressive symptoms) as well as the possible moderating role of social support on these outcomes.

#### **Hypothesis 1**

**Child symptoms, parenting stress, and parental depressive symptoms.** For the first hypothesis, separate hypotheses were made for each parent outcome. The hypotheses were:

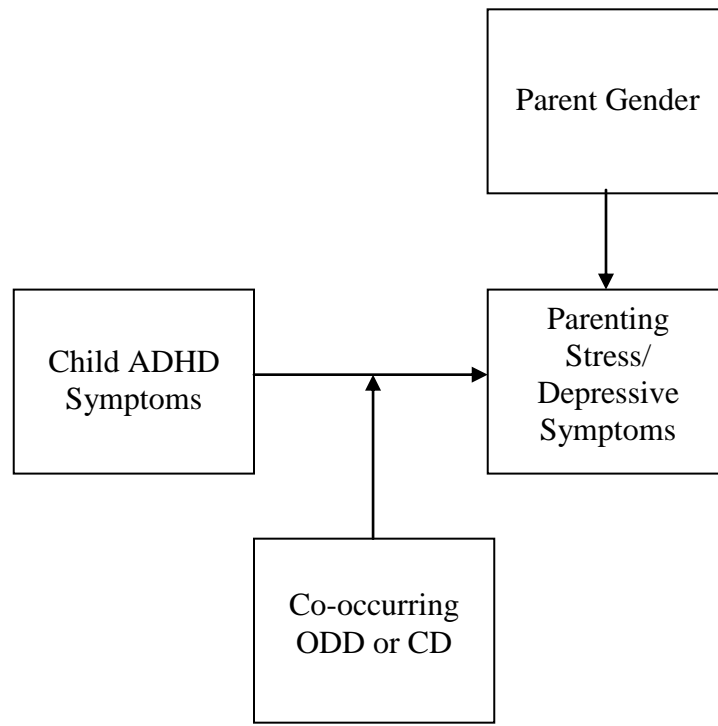
- 1a. Child ADHD symptoms will be positively related to parenting stress. Parents who report more severe ADHD symptoms for their child will report greater parenting stress.
- 1b. Child ADHD symptoms will be positively related to parental depressive symptoms. Parents who report more severe ADHD symptoms for their child will report greater depressive symptoms for themselves.
- 1c. The presence of co-occurring symptoms of ODD or CD will moderate the relation between child ADHD symptoms and parenting stress. Parents of children with ADHD and high symptom levels of ODD or CD will report greater parenting stress than parents of children with fewer symptoms of ODD or CD.
- 1d. The presence of co-occurring symptoms of ODD or CD will moderate the relation between child ADHD symptoms and parental depressive symptoms. Parents of children with ADHD and high symptom levels of ODD or CD will report greater parental depressive symptoms than parents of children with fewer symptoms of ODD or CD.

It has been well established that parents of children with ADHD report greater parenting stress and higher levels of depressive symptoms than parents who do not have a child with ADHD (Barkley, 2003; Cunningham et al., 1988; Fischer, 1990; Gerdes et al., 2007; Johnston, 1996; Whalen et al., 2006). However, research on the impact of stimulant medication has found that when children exhibit a decrease in ADHD symptoms, parents report less distress (Barkley, 2003; Fischer, 1990; Whalen et al., 2006). Thus, it might not

be the ADHD symptoms per se but instead the severity of the child's ADHD symptoms that is associated with increased parental distress. This study expected to replicate this finding; it was hypothesized that the severity of parent-reported child ADHD symptoms would be positively related to parenting stress and parental depressive symptoms.

Although raising a child with ADHD is associated with increased risk for experiencing parenting stress and depressive symptoms in general, research has found that parents of children with ADHD and co-occurring ODD or CD are at greater risk of experiencing parenting stress and depressive symptoms when compared to parents of children with ADHD alone (Barkley, 2003; Johnston, 1996). In fact, there is some evidence to suggest that co-occurring ODD might account for the relation between ADHD and parental psychological distress (Bussing et al., 2003; Johnston, 1996). Therefore, this study examined the potential impact of co-occurring symptoms of ODD or CD on the relation between child ADHD symptoms and parent functioning. It was hypothesized that co-occurring symptoms of ODD or CD would moderate the relation between ADHD and parenting stress and depressive symptoms (Figure 1). In addition, parent gender was entered as a covariate in analyses because there is some evidence to suggest that mothers and fathers of children with ADHD might differ in the extent to which they report depressive symptoms and parenting stress associated with raising a child with ADHD (Baker, 1994; Cunningham et al., 1998; Johnston, 1996).

Figure 1. Main Effects and Moderator Model for Hypothesis 1



## Hypothesis 2

**Participation in an Internet support group, social support, and perceived stress.** For the second hypothesis, separate hypotheses were made for each type of social support. The hypotheses were:

- 2a. Parents' level of participation in the Internet support group will be negatively related to the degree of parenting stress reported. Parents with greater levels of participation will report a lesser degree of parenting stress.
- 2b. Enacted social support received from the Internet support group will moderate the relation between level of participation in the support group and degree of parenting stress. The relation between participation in the support group and

degree of parenting stress will be supported only for those parents with higher levels of enacted support.

- 2c. Perceived social support received from the Internet support group will moderate the relation between level of participation in the support group and degree of parenting stress. The relation between participation in the support group and degree of parenting stress will be supported only for those parents with higher levels of perceived support.

As mentioned earlier, it is well known that parents of children with ADHD report greater levels of stress than parents of children who do not have ADHD (Barkley, 2003; Cunningham et al., 1988; Fischer, 1990; Johnston, 1996; Whalen et al., 2006). However, social support has been found to reduce the negative impact of stressors associated with raising a child with challenging behavior (Suarez & Baker, 1997). In addition, previous research has found that participation in support groups is associated with decreased stress for parents of children with disabilities in general (Shapiro, 1989; Solomon et al., 2001) and parents of children with ADHD (Singh & Curtis, 1997; van Kraayenoord, 2002). Research on Internet support groups has also found that individuals with higher rates of participation in an Internet support group report less perceived stress compared to those with lower participation (McKenna, 2008). Therefore, it was hypothesized that participation in the support group would be associated with a lower degree of parenting stress.

Participation in the support group was measured in a few ways. First, parents' report of the total length of time they had participated in the group was examined to

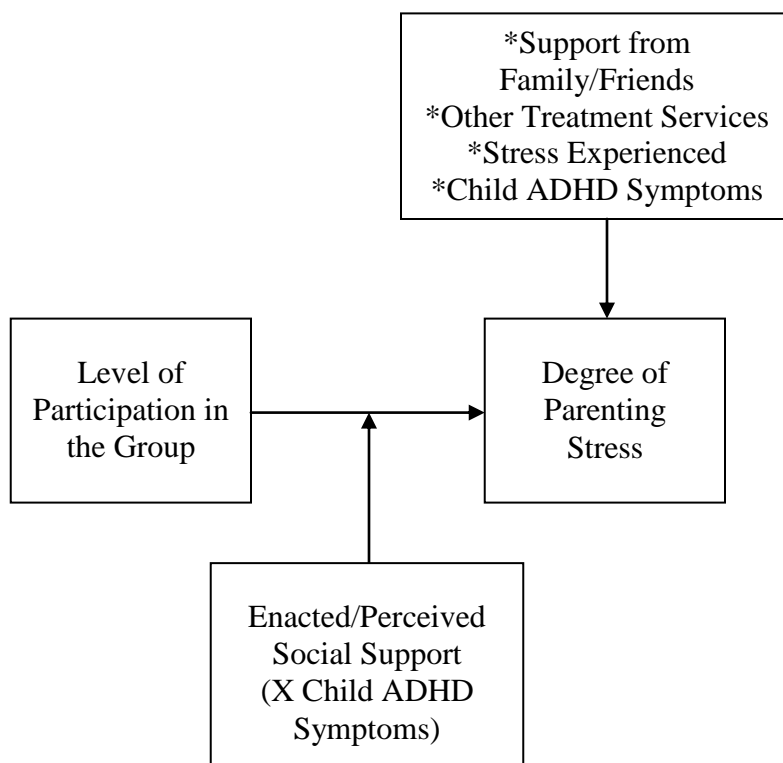
determine if parents who belonged to the group for a greater length of time differed from parents who belonged to the group for a shorter length of time. Second, parents' report of their activity levels in the group over the past month (i.e., visits to the group per week, hours spent visiting the group per week, number of messages posted per week) were examined to determine if current activity level was related to parenting stress. These four variables were examined separately in analyses to explore the degree to which the participation variables were related to parenting stress. In addition, correlations between the variables were explored to determine if the items could be aggregated to form a composite participation variable, which would then be included in subsequent analyses.

Although support groups appear to impact the stress levels reported by participants, the mechanisms by which participation in a support group is related to decreased stress in parents are poorly understood. One theory asserts that social support may lead a person to view the stressful event in a less destructive or catastrophic manner (Cohen & Wills, 1985). In other words, social support might help reframe the stressful event and help the person recognize that although the stressor is difficult, it is not as devastating as once perceived. For example, social support might help parents of children with difficult behavior view the child's behavior as less overwhelming, thereby decreasing the parent's stress reaction (Koeske & Koeske, 1990). Therefore, social support was examined as a potential moderator of the relation between participation in the support group and the degree of parenting stress reported by parents. Support received from other sources and previous treatment received were entered as covariates in an attempt to isolate the unique impact of support received from the Internet support group.

In addition, because this study sought to examine the extent to which social support impacts parents' view of the degree to which events experienced were perceived to be stressful, the number of stressful events experienced by parents was entered as a covariate. It was hypothesized that social support received from the group would impact the way parents viewed the stressful events they experienced, such that parents who received greater levels of support from the group would perceive events as less stressful than parents who received lower levels of support from the group.

Finally, due to the fact that previous research has found not only that the severity of parent reported child ADHD symptoms is related to greater parenting stress (Barkley, 2003; Bussing et al., 2003; Fischer, 1990; Whalen et al., 2006) but also that parents with lower levels of support perceive their children as exhibiting greater behavior problems

Figure 2. Main Effects and Moderator Model for Hypothesis 2





(Cunningham et al., 1998), child ADHD symptoms were entered as a covariate and examined as an interaction term. It was hypothesized that social support received from the Internet support group would moderate the relation between participation in the support group and degree of parenting stress. In addition, analyses examined if this relation differed depending on severity of child ADHD symptoms (Figure 2).

### **Hypothesis 3**

**Participation in an Internet support group, social support, and parental depression.** For the third hypothesis, separate hypotheses were made for each type of social support. The hypotheses were:

- 3a. Parents' level of participation in an Internet support group will be negatively related to parental depressive symptoms. Parents with greater levels of participation will report fewer depressive symptoms.
- 3b. Enacted social support received from the Internet support group will moderate the relation between level of participation in the support group and parental depressive symptoms. The relation between participation and parental depressive symptoms will be supported only for those parents with higher levels of enacted support.
- 3c. Perceived social support received from the Internet support group will moderate the relation between level of participation in the support group and parental depressive symptoms. The relation between participation and parental depressive symptoms will be supported only for those parents with higher levels of perceived support.

As mentioned earlier, children with ADHD exhibit many challenging behaviors and parents of children with ADHD are at increased risk of experiencing low parenting self-esteem, less self-efficacy, and less satisfaction in their role as a parent (Harrison & Sofronoff, 2002; Johnston, 1996; Mash & Johnston, 1983). Furthermore, these difficulties contribute to an increased risk of parents of children with ADHD experiencing depressive symptoms (Barkley, 2003; Chronis et al., 2006; Fischer, 1990; Johnston, 1996; Whalen et al., 2006). As with parenting stress, participation in support groups has been shown to be related to decreased depressive symptoms for parents of children with ADHD and other challenging behavior (Shapiro, 1989; Singh & Curtis, 1997; Solomon et al., 2001; van Kraayenoord, 2002). Therefore, it was hypothesized that participation in the Internet support group would be associated with lower levels of depressive symptoms and that parents with greater levels of participation would report fewer depressive symptoms than parents with lower levels of participation in the group.

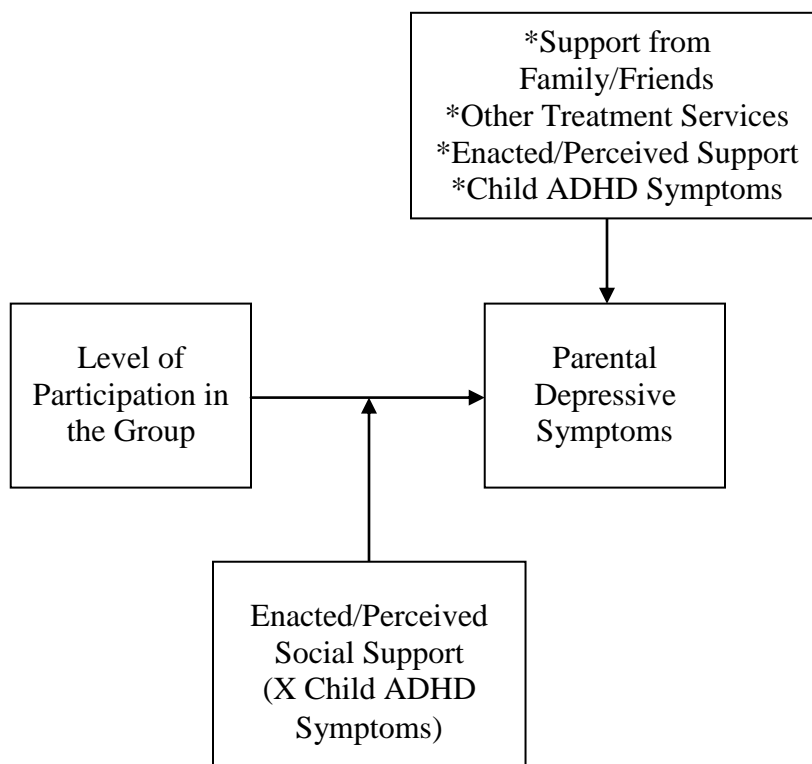
Although social support in general has been shown to be associated with lower levels of depressive symptoms (Suarez & Baker, 1997), some research has found that different indicators of social support might be related to different outcomes. For example, while perceived support has been found to be associated with better psychological adjustment, some research has found that enacted support is related to higher levels of psychopathology and distress (Barerra, 1986). In fact, one study of parents of children with ADHD found that mothers who accessed more social support reported higher levels of distress than mothers who sought less social support (Podolski & Nigg, 2001). Another study of caregivers of adult offspring with mental illness found that support group

participants reported greater levels of depressive symptoms than non-support group members (Cook et al., 1999). One reason offered to explain this counterintuitive finding has been that perhaps individuals struggling with coping with extreme stress are more likely to seek out support. Thus, these individuals report higher levels of enacted support and distress than those individuals who are experiencing fewer difficulties and thereby seeking less support. However, it is important to note that this phenomenon has typically been found when support group participants are compared to non-participants. In addition, this phenomenon has yet to be examined in the context of Internet support groups for parents.

Due to the conflicting findings for enacted and perceived support, the measure of social support used in this study assessed both indicators of support. Furthermore, the moderator model examined these two constructs separately to determine if results varied based on the type of support assessed (Figure 3). It was hypothesized that both enacted and perceived social support would moderate the relation between level of participation in the group and parent depressive symptoms, such that the relation between participation and depressive symptoms would be supported only for parents who reported higher levels of enacted or perceived support. Support received from face-to-face sources and other treatment services were statistically controlled for in analyses to examine if the impact of support received from the Internet support group was related to parental depressive symptoms above and beyond the effect of support and services received from outside sources. Additionally, in analyses examining perceived support received from the Internet support group as a moderator, enacted support from the group was entered as a covariate

(and vice versa when enacted support was the moderator) in an attempt to examine the unique impact perceived support had on parental depressive symptoms above and beyond the impact of enacted support. In addition, child ADHD symptoms was entered as a covariate and examined as an interaction term to explore the extent to which this variable was related to participation in an Internet support group, social support, and parental depressive symptoms.

Figure 3. Main Effects and Moderator Model for Hypothesis 3



## CHAPTER THREE

### METHOD

This chapter describes the methodology used in this dissertation. First, procedures, including identification of Internet support groups, recruitment of participants, and ethical considerations for research conducted using the Internet, are outlined. Next, data collection procedures are described. Third, measures used in this study are presented. Finally, analytic procedures for research questions and hypotheses are discussed.

#### **Procedures**

Participants were recruited from Internet support groups for parents of children with ADHD. The primary investigator first identified groups eligible for participation and then invited group members to participate. The procedures for these two tasks are described in greater detail below. In addition, ethical considerations for Internet research are discussed.

#### **Identification of Internet Support Groups**

Groups were identified using an Internet search engine (Google) and key phrases (i.e., ADHD parent support group). Due to the fact that this was the first known research study examining Internet support groups for parents of children with ADHD, specific support groups were not targeted. Instead, English speaking Internet support groups for parents of children with ADHD that met the inclusionary criteria described below were

invited to participate to gain a better understanding of the vast experiences of parents in Internet support groups. Furthermore, the researcher aimed to reach as many parents as possible to better ensure that the sample obtained was representative of the broader population of parents who participate in Internet support groups for ADHD.

The requirements for groups to be invited to participate in this study were that the group: (1) exclusively took place on the Internet, (2) targeted parents of children with ADHD, (3) aimed to provide some type of support to parents, and (4) had some level of activity within the past month. Groups that targeted parents of children with disabilities or behavioral concerns in general were not included. In addition, groups whose primary goal was to provide services other than support (e.g., a group founded to advertise a new medication or intervention) were not included. The website for the group and messages posted were examined prior to posting the study invitation to ensure the group adhered to these inclusionary requirements.

Nine Internet support groups were identified as meeting the four study inclusionary criteria mentioned above. Of these groups, three did not have a moderator; thus, permission was not required to post the study invitation to the group. Of the remaining six groups, one moderator never responded to the investigator's request and two moderators did not grant permission and stated that conducting research violated the rules of their group. Moderators of the remaining three groups provided permission to post the study invitation to the group. Therefore, the study invitation was posted in six Internet support groups.

Due to the fact that the initial response rate fell below the target sample size, a follow-up message was posted four weeks following the initial post reminding members to complete the survey if they had not already completed it. The online survey remained open for at least four weeks after the reminder invitation was posted to provide adequate time for parents to complete the study measures.

### **Recruitment of Participants**

Participants were recruited from Internet support groups identified using the procedures described above. Requirements for individuals to participate in the study were: (1) they were over eighteen years of age, (2) they were the parent of at least one child with ADHD, and (3) they were a member of at least one Internet support group for parents of children with ADHD. Due to the fact that this study was interested in the experiences of highly active as well as less active members of Internet support groups, no minimum requirements were set for length of time or level of participation in the group. Parents who had more than one child with ADHD were instructed to consider the child who had been diagnosed with ADHD for the greatest length of time when answering questions.

The survey invitation message was posted to the message board of groups in which permission had been obtained. The message explained that participation was completely voluntary and contained information about the objectives of the study, the length of the survey, qualification criteria, and the URL link to the online survey. In addition, contact information for the primary investigatory was provided for individuals who had questions, were interested in obtaining further information, or who preferred to

have measures mailed to them. However, no individuals contacted the investigator to ask questions or request that measures be mailed to them.

The online survey began with an informed consent document that introduced the participant to the study and explained the requirements for participation (see Appendix A). Participants who provided consent were then able to view and respond to the questionnaires. The survey contained six measures: (1) Demographic Questionnaire, (2) Previous Treatment Experiences, (3) Center for Epidemiologic Studies Depression Scale, (4) Disruptive Behavior Stress Inventory, (5) Multi-Dimensional Support Scale, and (6) Vanderbilt ADHD Diagnostic Parent Rating Scale. Upon completion of measures, participants were presented with a thank you page. In addition, due to the fact that previous research has found that completion rates of Internet experiments are improved when a reward is offered (Reips, 2002), participants were provided with an opportunity to submit their email address to receive a five dollar electronic gift certificate to Amazon.com or Kmart/Sears.

Research guidelines suggest that the target sample size for a study should be determined prior to data collection and should be based on a power calculation to reduce the chance of committing a Type II error (Wilkinson & the Task Force on Statistical Inference, 1999). Cohen (1992) recommends that in studies testing several hypotheses, the significance criterion ( $\alpha$ ) should be set at .01 per hypothesis to reduce the risk of experimentwise error. Power calculations are based on  $\alpha$ , the estimated magnitude of effect size in the population (small, medium, or large), the analytical procedures selected, and the number of independent variables in a given analysis (Cohen, 1992; Wilkinson &



the Task Force on Statistical Inference, 1999). Using these criteria, it was determined that a sample size of 147 was required for the multiple regression analyses conducted in this study (Cohen, 1992). Complete data were obtained from over 200 individuals; therefore it can be assumed that the current study had adequate statistical power for analyses.

### **Ethical Considerations**

The use of the Internet for psychological experimentation has grown rapidly in the past twenty years (Ess, 2007; Reips, 2002). Although the Internet provides a convenient method for accessing a large number of potential participants and obtaining electronic survey data, ethical transgressions committed by researchers in the early years of Internet research highlight the need for ethical guidelines pertaining to Internet research (see Ess, 2007 for a review of the history of Internet research ethics). Therefore, this study adhered to the ethical guidelines set by both the American Psychological Association (2002) and the Association of Internet Researchers (Ess & AoIR Ethics Working Committee, 2002).

A few important ethical guidelines considered for this study were informed consent, privacy, and debriefing. Informed consent was obtained from all participants before they were given access to the survey. Participants were provided with a brief description of the study (see Appendix A) and were asked to check a box indicating they were willing to participate in the study. Participants were also provided with contact information for the primary investigator to provide them an opportunity to ask any questions about the study before beginning. Privacy was also protected in a few ways. First, the only piece of identifying information that was collected was an email address, which was collected only for those participants who voluntarily provided it to receive a

gift certificate for participation. Second, email addresses were stored separately from the database which identified participants using unique ID numbers. Third, survey data were deleted from the Internet after being downloaded. Thus, risks to privacy or confidentiality associated with participation in this study were not any greater than risks associated with regular Internet use. Finally, at the end of the survey, participants were once again provided with the contact information for the primary investigator to answer any questions they had about the study. Due to the fact that the risks to participants in the study appear to be minimal, it is believed that the benefits of the knowledge obtained in the study offset the risks associated with participation.

### **Data Collection**

Data collection took place exclusively on the Internet using *Opinio* online survey software. Online survey data were downloaded at least three times per week. Participants were assigned a participant ID number and data were entered into statistical analysis software (PASW Statistics 18) using this ID number. As mentioned previously, to ensure privacy and confidentiality of participants, a list of ID numbers and corresponding email addresses was maintained in a location separate from the data set. In addition, after data were downloaded, they were deleted from the Internet to further ensure confidentiality.

### **Measures and Operational Definition of Variables**

Several measures were used to examine the research questions and hypotheses. The section that follows presents information about the items included on each measure and the psychometric properties, if available. In addition, a copy of each measure can be found in the appendices.

### **Demographic Questionnaire**

A measure created for this study was used to obtain information about several important demographic variables and other descriptive information relevant to this study (Appendix B). The first part of the questionnaire gathered information about the parent completing the measures such as parent gender, age, ethnicity, and income level. The second part of the questionnaire obtained information about the child with ADHD. Questions included child age, professional who diagnosed the child, and co-occurring diagnoses. Finally, the third part of the measure included questions about the parent's experience in the Internet support group. Parents were asked about reasons they joined the group, treatment received prior to joining the group, activity levels in the group, and negative experiences encountered in the group. Because this measure was developed for the current study, the psychometric properties are unknown. However, questions were developed based on previous research on ADHD and Internet support groups.

### **Previous Treatment Experiences**

Due to the fact that a measure of previous treatment experiences for ADHD could not be identified, a measure was created to obtain information about previous treatment experiences and behavior management techniques used by parents (Appendix C). The purpose of these questions was to better understand additional techniques and treatment choices (beyond participation in the Internet support group) used to manage the child's behavior and ADHD symptoms. The measure was created based on knowledge about popular treatments for ADHD and the Home Behavior Management Techniques measure designed by the University of Buffalo Center for Children and Families (see

ccf.buffalo.edu for a copy of the original measure). Although the psychometric properties of the measure are unknown, items were developed based on extensive research on popular treatments for ADHD and it is believed that items adequately represent the variety of treatment choices available. Parents were asked to rate the frequency they used each technique or treatment option as well as the effectiveness of the technique to ascertain information about treatment choices of parents who participate in Internet support groups.

### **Center for Epidemiologic Studies Depression Scale**

The Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977), which is a popular measure of depression symptomatology (O'Rourke, 2004), was used to assess current depressive symptoms of parents. The CES-D is a twenty item scale developed to screen for depressive symptoms in the general population (Appendix D; Radloff, 1977). Due to the fact that the measure is meant to assess current depressive symptomatology, respondents are asked to consider the extent to which they experienced certain emotional (e.g., "I felt depressed") or behavioral (e.g., "I had crying spells") states over the past week. The frequency each item was experienced is rated on a four-point scale ranging from zero ("rarely or none of the time") to three ("most or all of the time"). The scale assesses various types of depressive symptoms including depressive affect (e.g., "I felt sad"), somatic symptoms (e.g., "I did not feel like eating; my appetite was poor"), and interpersonal symptoms (e.g., "I felt that people disliked me"). In addition, four positively-worded items (which are reverse-scored; e.g., "I was happy"), are included to examine the absence of well-being. Respondents may earn a score between

zero and sixty, with a score greater than fifteen indicating clinically significant depressive symptomatology (O'Rourke, 2004). It is important to note that the CES-D was designed to assess depressive symptomatology and is not intended to be used as a diagnostic measure, thus conclusions about whether a respondent meets the diagnostic criteria for a depressive disorder should not be made using this measure (Radloff, 1977).

The CES-D has been used with various populations and the psychometric properties of the measure are sound. A meta-analysis of the reliability of the CES-D for studies specifically examining depressive symptoms in caregivers found the measure has good internal consistency, with an average Cronbach's alpha of 0.88 across studies (O'Rourke, 2004). In addition, the CES-D correlates well with other depression scales and discriminates well between psychiatric inpatient and general population samples (Radloff, 1977). Although shorter forms of the CES-D have been used in previous research, a meta-analytic review recommended that the twenty-item CES-D be used in research to ensure the greatest reliability estimates (O'Rourke, 2004). Therefore, this study utilized the twenty-item CES-D to examine current depressive symptomatology in parents of children with ADHD.

### **Disruptive Behavior Stress Inventory**

The Disruptive Behavior Stress Inventory (DBSI; Johnson & Reader, 2002), which was developed to assess the unique stressors experienced by parents of children with ADHD, was used to obtain information about child behavior-related stressors experienced by parents (Appendix E). The measure asks parents if over the past six months they experienced 40 stressful events commonly experienced by parents of

children with ADHD (e.g., “Dealing with teachers’ complaints about your child”, “Not knowing how to deal with your child’s behavior”, “Being unable to take your child to public places”) and then asks parents to rate the level of stress associated with events experienced on a four-point scale ranging from zero to three, with zero being “not at all stressful”, one being “somewhat stressful”, two being “moderately stressful”, and three being “very stressful”. Thus, the measure yields two scales: (1) Stress Experience (the sum of “yes” responses, possible range 0-40) and (2) Stress Degree (the sum of stressfulness ratings, possible range 0-120).

The psychometrics of the DBSI have been examined in two studies and the measure appears to have adequate psychometric properties. The original study yielded a Cronbach’s coefficient alpha of 0.93 for the Stress Experience scale and 0.96 for the Stress Degree scale (Johnson & Reader, 2002). A recent replication study that included over 60 parents of children with ADHD obtained a Cronbach’s coefficient alpha of 0.90 for the Stress Experience scale and 0.93 for the Stress Degree Scale (Reader, Stewart, & Johnson, 2009). The test-retest reliability coefficient over one week is 0.76 for the Stress Experience Scale and 0.65 for the Stress Degree scale (Johnson & Reader, 2002). Finally, when comparing parents of children with ADHD and parents of children with no psychiatric disorder, the DBSI has been shown to have adequate discriminant validity on both the Stress Experience and Stress Degree scales, with parents of children with ADHD endorsing significantly more items on both scales (Reader et al., 2009). The Stress Experience and Stress Degree scales were examined separately in this study to gather

information about the types of stressors experienced by parents (Stress Experience) as well as the degree to which the parent perceived the event to be stressful (Stress Degree).

### **Multi-Dimensional Support Scale**

The Multi-Dimensional Support Scale (MDSS; Neuling & Winefield, 1988; Winefield, Winefield, & Tiggermann, 1992) was used to assess the availability and adequacy of social support received by participants (Appendix F). This measure is unique because it not only assesses the source, type, and frequency of social support but also asks participants to rate the adequacy of the support they received. The MDSS, which was originally used with a sample of breast cancer patients (Neuling & Winefield, 1988) and later with a sample of healthy young adults (Winefield et al., 1992), was adapted for this study to represent the experiences of parents of children with ADHD who participate in an Internet support group.

Parents were asked to rate the frequency with which they elicited social support from (1) family members, (2) friends outside the Internet support group, and (3) Internet support group members. For each support source, participants respond to seven items to gather information about the frequency with which they obtained different types of support (e.g., emotional support: “How often did you feel that they were really trying to understand your problems”; informational support: “How often did they answer your questions or give you advice about how to solve your problems”; tangible support: “How often did they help you in practical ways, like doing things for you or lending you money”) over the past month. Frequency of support is rated on a four-point scale, with one being “never” and four being “usually”. A sum total of frequency of support is

calculated for each source (possible range 7-28) to determine the level of enacted support received from each source. Additionally, to gather information about the adequacy of support received, respondents are asked if they would have liked each support item “more”, “less”, or “same”. The adequacy of support scale is then dichotomously coded, with “not adequate” (participant indicates they would have liked support “more” or “less”) coded as a negative one and “adequate” (participant indicates they would have liked the “same” amount of support) coded as zero, to yield a sum total of adequacy of support (i.e., perceived support) for each source (possible range -7 to 0).

The MDSS has several advantages over other measures of social support. First, although many argue that social support is best viewed as a multidimensional construct (Neuling & Winefield, 1998), most measures assess only one facet of social support (e.g., only emotional support). Thus, one advantage of the MDSS is that it assesses various types of social support (e.g., emotional, practical). In addition, the MDSS asks participants to consider various sources of support (e.g., family, friends). In this study, the MDSS allowed for valuable information to be gathered about support participants received from individuals outside and within the Internet support group. Finally, previous research on social support suggests it is not just the quantity of support received that is beneficial to individuals experiencing difficult life events but it is also the quality, or satisfaction with support, that contributes to the helpfulness of social support (Heitzmann & Kaplan, 1988; Neuling & Winefield, 1988). Thus, this measure not only yields information about the frequency with which participants receive support, but also



provides valuable information about the extent to which the support met the needs of participants.

Previous research has found that the MDSS is sensitive in differentiating between social support received from different sources (Neuling & Winefield, 1988). Furthermore, the broad scales assessing availability and adequacy of support have been shown to have adequate internal consistency (availability:  $\alpha = .85-.90$ ; adequacy:  $\alpha = .81-.87$ ; Winefield et al., 1992). However, when researchers have attempted to examine different subscales of support (i.e., emotional, informational, tangible) within the broader scales, the value for the Cronbach's alpha typically fell below the recommended cutoff for emotional ( $\alpha = .62-.81$ ), informational ( $\alpha = .50-.59$ ), and tangible ( $\alpha = .55-.60$ ) support (Neuling & Winefield, 1988). Therefore, only the broad scales of availability and adequacy of support were used in this study.

Due to the fact that the sources of support assessed with the measure can be adapted based on the populations targeted in a given research study (Winefield et al., 1992), the MDSS was used to differentiate between support received from family members, friends outside of the Internet support group, and members of the Internet support group in the current study.

### **Vanderbilt ADHD Diagnostic Parent Rating Scale**

The Vanderbilt ADHD Diagnostic Parent Rating Scale (VADPRS; Wolraich, Lambert, Doffing, Bickman, Simmons, & Worley, 2003) was used to assess parents' report of their child's ADHD symptoms (Appendix G). The VADPRS is a 47-item measure that includes the eighteen *DSM-IV* criteria for ADHD, eight criteria for ODD,

and fourteen criteria for CD as well as seven items that screen for anxiety and depression. Parents are asked to rate the severity of each child behavior on a four-point scale, ranging from “never” to “very often.” A child meets the diagnostic criteria for ADHD if a parent scores a two or three (the behavior occurs “often” or “very often”) for the required number of symptoms for each subtype of ADHD (hyperactive/impulsive, inattentive, or combined). In addition, an eight-item performance section asks parents to rate a child’s functioning in academic and relationship domains which provides information about impairment in these areas of functioning.

The VADPRS has demonstrated good internal consistency for ratings of ADHD symptoms (coefficient alphas range from 0.94 to 0.95 across samples), ODD/CD (alpha of 0.91), and anxiety-depression (alpha of 0.79; Wolraich et al., 2003) and effectively discriminates between clinical and nonclinical groups (Pelham et al., 2005). The VADPRS was used in the current study to measure child ADHD symptomatology as well as co-occurring symptoms of ODD and CD.

### **Analytic Procedures for Research Questions**

The PASW Statistics 18 program was used for statistical analyses. The specific techniques used to address each research question or hypothesis are described below.

#### **Descriptive Information**

A demographic measure created for the study (Appendix B) was used to obtain descriptive information about the demographic characteristics of members of Internet support groups for parents of children with ADHD (Research Question 1). In addition, this measure was used to obtain information about motivating factors that contributed to a

parent joining an Internet support group (Research Question 2) as well as negative experiences of parents in these groups (Research Question 3). Frequencies were calculated to provide descriptive information related to these research questions.

Pearson product-moment correlations were calculated to determine if demographic variables (e.g., parent age, child age, income) were related to the major independent and dependent variables: (1) child ADHD symptoms, (2) parenting stress (experienced and degree of stress), (3) parental depressive symptoms, and (4) social support. Variables that were significantly correlated with the independent or dependent variables were included as covariates in regression analyses. In addition, independent samples *t*-tests were conducted to determine if significant differences in the above mentioned variables were found between groups based on parent gender, child gender, and marital status (married/not married). Variables with significant group differences were also included as covariates in regression analyses to statistically control for the impact of these variables.

### **Comparing Sample to Previous Samples**

It was believed that the sample of parents recruited for this study may differ from other parents of children with ADHD due to the fact that they have chosen to seek out and participate in an Internet support group for parents. Therefore, an independent samples *t*-test was conducted to compare the sample means obtained in this study on measures of parenting stress and depressive symptoms with the sample means from previous research with parents of children with ADHD. The comparison means used for parenting stress were obtained from a replication study examining the psychometric

properties of the DBSI with a sample of parents seeking treatment for their child (DBSI Stress Experience scale,  $M = 20.45$ ,  $SD = 8.34$ ; DBSI Stress Degree scale,  $M = 40.45$ ,  $SD = 22.92$ ; Reader et al., 2009). Similarly, the comparison sample mean for parental depressive symptoms was obtained in a study assessing depressive symptoms in a sample of parents of children with ADHD presenting for treatment in an outpatient setting ( $M = 6.98$ ,  $SD = 6.78$ ; van der Oord, Prins, Oosterlaan, & Emmelkamp, 2006). The goal of analyses was to determine the extent to which the parenting stress and depressive symptoms reported by parents in this study was similar to or different from the stress and depressive symptoms reported by other samples of parents of children with ADHD.

#### **Previous Treatment Experience (Research Question 4)**

A measure of previous treatment experiences (Appendix C), which was created for this study, was used to better understand the treatment use of participants in Internet support groups. Due to the fact that the psychometric properties of this measure are unknown, an Exploratory Factor Analysis was conducted to justify the development of composite scales of treatment use, which were then entered as covariates in analyses for Hypotheses 2 and 3.

Treatment use typologies were also created and examined using information reported by parents on the Previous Treatment Experiences measure. The following treatment use typologies were examined: (1) Internet support group only, (2) Internet support group and medication, (3) Internet support group and therapy, and (4) Internet support group, medication, and therapy. Potential differences in parenting stress, parental

depressive symptoms, and child ADHD symptoms associated with the two most common typologies were explored using an independent samples *t*-test.

### **Basic Analytic Procedures for Hypotheses**

Prior to analyses, the recommendations of Aiken and West (1991) were followed; continuous independent variables (IVs) were centered (i.e., the mean of the variable was subtracted from each individual score for that variable) and interaction terms for moderator analyses were created by multiplying the centered predictors. The following variables were centered: child ADHD and ODD/CD symptoms (from the VADPRS), social support (total frequency of support [enacted support] and adequacy of support [perceived support] for each source of support from the MDSS), and support group participation variables (from the demographic measure).

A hierarchical stepwise procedure was used in multiple regression analyses, with demographic variables and independent variables included in separate blocks. Due to the fact that there was no theoretical rationale to guide the order in which specific demographic and independent variables were entered into the regression equation, the forward selection technique was used in all analyses instead of the enter technique. However, because of the desire to include all variables in the complete model (instead of allowing non-significant variables to be dropped from the model), the value for *p*-in was set at .999 and the value for *p*-out was set at 1.0. In addition, due to the fact that many variables were included in each model and several regressions were conducted, a significance value of  $p < .01$  was used to reduce the chance of committing a Type I error

(Cohen, 1992). Finally, significant interactions were probed using the techniques recommended by Aiken and West (1991) and Holmbeck (1997).

Upon examination of the dataset, it was apparent that there was a broad range in the length of time parents took to complete the survey measures ( $M = 25.86$  minutes,  $SD = 16.089$ , range: 8-153, median: 24). Furthermore, Pearson product-moment correlations indicated that there was a significant association between the length of time parents took to complete the survey and the following independent or dependent variables of interest: parental depressive symptoms ( $r = -.24, p < .01$ ), amount of parenting stress experienced ( $r = -.34, p < .001$ ), degree of parenting stress experienced ( $r = -.22, p < .01$ ), child ODD/CD symptoms ( $r = -.21, p < .01$ ), perceived support from family ( $r = .39, p < .001$ ), enacted support from friends ( $r = -.32, p < .001$ ), perceived support from friends ( $r = .30, p < .001$ ), and perceived support from the Internet support group ( $r = .28, p < .001$ ). Given these findings, the length of time parents took to complete the survey measures was included as a covariate in analyses to statistically control for variance in outcomes related to this variable.

### **Hypothesis 1**

Multiple regression analyses were used to explore the relation between child ADHD symptoms and three dependent variables (DVs): parenting stress experienced, degree of parenting stress, and parental depressive symptoms. A hierarchical stepwise procedure and the forward selection technique were used. For Hypothesis 1a and 1b, which examined the relation between child ADHD symptoms and the DVs, the length of time it took parents to complete the measures was entered in step one. Parent gender and

the demographic variables significantly correlated with parent outcomes were entered in the second block to statistically control for the effect of these variables. The third step included child ADHD symptoms from the VADPRS. Therefore, analyses examined the relation between child ADHD symptoms and parent functioning after statistically controlling for the impact of parent gender and demographic variables.

For hypotheses 1c and 1d, which examined child ODD and CD symptoms as a moderator variable, the first step included time to complete measures and the second block included parent gender and demographic variables. The third block included child ADHD symptoms as well as child ODD and CD symptoms from the VADPRS. The fourth step contained the two-way interaction term (ADHD symptoms X ODD/CD symptoms). Because three DVs were examined, a total of six regression analyses were conducted for Hypothesis 1.

## **Hypothesis 2**

For the second hypothesis, the relation between participation in an Internet support group and perceived parenting stress was examined. Four participation variables from the demographic measure (Appendix B) were explored as separate independent variables: (1) length of time in the group, (2) number of visits to the group per week during the past month, (3) number of hours spent visiting the group per week in the past month, and (4) number of messages posted per week in the past month. In addition, reliability analyses were conducted to determine if the participation variables could be combined to yield a single participation scale (i.e., a Cronbach's alpha of 0.70 or greater), which would be examined as a fifth IV. However, reliability analyses found that the

Cronbach's alpha of the scale with the four participation variables was  $\alpha = .60$ , indicating poor internal consistency. In addition, alpha levels for the scale if one item was deleted all fell below the recommended cutoff of  $\alpha = .70$ . Therefore, a composite variable was not created and the participation variables were examined separately in analyses.

Multiple regression analyses were used to explore the relation between participation in the support group (the IV) and degree of parenting stress (the DV). In addition, social support, as measured by the MDSS, was explored as a possible moderator variable. Due to the fact that previous research has found that different types of social support might be related to different outcomes (Barerra, 1986; Cook et al., 1999; Podolski & Nigg, 2001), two potential moderators, frequency and adequacy of support (i.e., enacted and perceived support) received from the Internet support group, were examined in separate analyses.

A hierarchical stepwise procedure and the forward selection technique were used in all regression analyses. For Hypothesis 2a, the first step included time to complete measures and the second step included demographic variables significantly related to the IVs and DVs. The third step included four additional covariates: (1) support received from family and friends outside of the support group, (2) a composite scale of previous treatment use (see Research Question 4), (3) stress experienced, and (4) child ADHD symptoms. In the fourth step, one of the variables assessing parent participation in the Internet support group was entered. Therefore, analyses examined the extent to which participation in an Internet support group was related to the degree of parenting stress reported, after controlling for several covariates.



In moderator analyses (Hypotheses 2b and 2c), the covariates were entered in the first three steps of the regression equation as described above. One of the parent participation variables and social support (enacted support for Hypothesis 2b and perceived support for Hypothesis 2c) from the Internet support group were entered in step four. In step five, three two-way interact terms were entered (participation in group X Internet social support, child ADHD symptoms X Internet social support, participation in group X child ADHD symptoms). Finally, a three-way interaction (participation in group X Internet social support X child ADHD symptoms) was entered in the sixth step. Regressions were run separately for each parent participation variable. Therefore, a total of twelve regressions were conducted for Hypothesis 2.

### **Hypothesis 3**

The third hypothesis examined the relation between participation in the support group and parental depressive symptoms, with social support received from the Internet support group included as a potential moderator variable. As with Hypothesis 2, participation variables were examined in separate analyses. Frequency and adequacy of support (i.e., enacted and perceived support) received from the Internet support group were also examined in separate analyses to explore the unique impact of these indicators of support on the relation between participation in the support group and parental depressive symptoms (Barerra, 1986; Cook et al., 1999; Podolski & Nigg, 2001). Multiple regression analyses and a hierarchical stepwise procedure (using the forward selection technique) were used to explore the relation between participation in the support group and parental depressive symptoms.

For Hypothesis 3a, the first step included time to complete measures and the second step included demographic variables significantly related to the IVs and DVs. The third step included three additional covariates: (1) support received from family and friends outside of the support group, (2) a composite scale of previous treatment use (see Research Question 4), and (3) child ADHD symptoms. In the fourth step, one of the participation variables was entered. Therefore, analyses examined the extent to which participation in an Internet support group was related to parental depressive symptoms while controlling for several possible covariates.

In moderator analyses (Hypothesis 3b and 3c), a fourth covariate was included in step three: enacted support from the Internet support group when perceived support was examined as a moderator (and vice versa). The covariates were included in the first three steps as described above. Participation in the support group and social support from the Internet support group (enacted support for Hypothesis 3b and perceived support for Hypothesis 3c) were entered in step four. In step five, three two-way interact terms were entered (participation in group X Internet social support, child ADHD symptoms X Internet social support, participation in group X child ADHD symptoms). Finally, a three-way interaction (participation in group X Internet social support X child ADHD symptoms) was entered in the sixth step. Regressions were run separately for the participation variables. Therefore, twelve regressions were run for Hypothesis 3.

## CHAPTER FOUR

### RESULTS

Participants were recruited from six Internet support groups for parents of children with ADHD (see Method for a complete description of recruitment procedures). In total, 237 participants completed the entire survey, while an additional 17 participants completed part of the survey (i.e., the participant began the survey and completed the first few measures, but exited the survey before completing all measures). However, after examining the responses, data from 35 of the 237 participants who completed the entire survey were excluded due to invalid response patterns (e.g., answered the same number for every item of the survey). Therefore, results are presented from data representing 202 complete responses and 17 partial responses.

The six groups included in the study differed in the size of membership and the number of participants who completed the survey. The smallest group had 84 members and the largest group had 24,033 members. However, it is important to note that the largest group had multiple message boards for individuals with ADHD, with three message boards specifically for parents of children with ADHD. Therefore, it is likely that only a portion of the 24,033 members were parents of children with ADHD. Table 1 illustrates the total number of members and response rates for the six groups included in this study, broken out by parent gender and whether or not the group was moderated.

Most parents reported they participated in more than one Internet support group, with parents reporting they belonged to an average of 2.38 ( $SD = 1.13$ ) groups. Forty-five (21%) parents reported they belonged to one Internet support group, 86 (40%) belonged to two groups, 52 (24%) belonged to three groups, 23 (11%) belonged to four groups, and 8 (4%) belonged to five or more Internet support groups. When completing the measures, parents were asked to consider only the Internet support group that targeted parents of children with ADHD in which they currently participated.

To obtain information about the degree to which parents participated in the Internet support group, parents were asked four questions to assess: (1) total length of participation in the group, (2) frequency of visits to the group per week, (3) frequency of posting or replying to messages per week, and (4) number of hours per week spent reading or writing posts. Parents were asked to select the range that best represented their level of participation for each question. The majority of parents reported they had participated in the Internet support group for several months. Four (2%) reported they had participated for less than 30 days, 25 (12%) participated for 1-3 months, 46 (21%)

Table 1. Number of Members and Participants in Internet Support Groups

	Group Type	Total Members	Female Complete	Male Complete	Female Partial	Male Partial	Response Rate
1	Moderated	2,315	14	0	7	1	0.01%
2	Not Moderated	84	31	18	0	0	58.33%
3	Not Moderated	1,653	15	26	1	1	0.03%
4	Not Moderated	4,095	6	1	0	0	<0.01%
5	Moderated	583	2	0	0	0	<0.01%
6	Moderated	24,033 <sup>1</sup>	17	72	1	6	<0.01%

<sup>1</sup> This group includes multiple ADHD message boards, with three boards specifically for parents of children with ADHD. Therefore, the total number of members does not necessarily indicate the number of parents who are members of the group.

Table 2. Rates of Participation in the Internet Support Group

	<i>n</i>	Percentage
<b>Length of Participation</b>		
Less Than 30 Days	4	2
1-3 Months	25	12
3-6 Months	46	21
6 Months – 1 Year	64	30
1-2 Years	50	23
2-3 Years	16	8
More than 3 Years	9	4
<b>Visits to Group Per Week</b>		
Less than Once a Week	8	4
One Time a Week	34	16
2-4 Times a Week	116	54
4-6 Times a Week	42	20
Daily	12	5
Multiple Times a Day	2	1
<b>Frequency of Posts to Group Per Week</b>		
Less than Once a Week	34	16
One Time a Week	58	27
2-4 Times a Week	90	42
4-6 Times a Week	29	13
Daily	2	1
Multiple Times a Day	1	1
<b>Hours Reading/Writing Posts Per Week</b>		
Less than One Hour	43	20
1-2 Hours	74	35
2-3 Hours	41	19
3-4 Hours	31	14
4-5 Hours	21	10
More than 5 Hours	4	2

participated for 3-6 months, 64 (30%) participated for 6 months-1 year, 50 (23%)

participated for 1-2 years, 16 (8%) participated for 2-3 years, and 9 (4%) had participated

in the group for over 3 years. The degree to which parents participated in the group

varied greatly. Most parents ( $n = 116$ ; 54%) reported they visited the group 2-4 times per

week, posted messages 2-4 times per week ( $n = 90$ ; 42%), and spent 1-2 hours per week

reading or writing posts ( $n = 74$ ; 35%). Complete results are presented in Table 2.

In the section that follows, results for the four research questions are reported. In addition, means, standard deviations, and correlations between the demographic, independent, and dependent variables are presented. Next, results comparing this sample to previous samples are described. Finally, results for the three hypotheses are reported.

### **Research Question 1**

The first research question examined the demographic characteristics of parents who participate in an Internet support group for parents of children with ADHD. Of the 219 parents who completed the demographic portion of the survey, 57% were male ( $n = 125$ ) and the average age was 37.08 ( $SD = 5.35$ ). Data were obtained from parents who were residents of 40 different states (see Table 3) and two countries outside of the United States (Canada,  $n = 2$ ; England,  $n = 1$ ). The majority of parents identified as White ( $n = 162$ ; 74%), while the remaining participants identified as American Indian or Alaska Native ( $n = 8$ ; 4%), Asian American ( $n = 14$ ; 6%), African American ( $n = 15$ ; 7%), Pacific Islander or Native Hawaiian ( $n = 9$ ; 4%), and multiracial ( $n = 11$ ; 5%). The majority of participants did not identify as Hispanic or Latino ( $n = 188$ ; 86%), but 11 (5%) individuals identified as Cuban, 14 (6%) as Mexican, and 6 (3%) as Puerto Rican. See Table 4 for demographic information about the participants in this study.

Overall, a majority of the participants in this study were married, had some post-high school education, and had an annual income that was greater than \$60,000 (Table 4). The marital status of participants was as follows: 5 (2%) were single, 1 (0.5%) was single but living with a partner, 201 (92%) were married, 11 (5%) were divorced, and 1 (0.5%) was widowed. Three participants (1%) were high school graduates (with no additional

post-high school training) while 51 (23%) had attended some college, 108 (49%) were college graduates, 49 (22%) had their Master's degree, 7 (3%) had a Doctoral degree, and 1 (0.5%) indicated he or she had some other professional degree. Finally, the annual household income reported by participants was: Under \$20,000 ( $n = 6$ ; 3%), \$20,000-40,000 ( $n = 4$ ; 2%), \$40,000-60,000 ( $n = 12$ ; 6%), \$60,000-80,000 ( $n = 66$ ; 30%), \$80,000-100,000 ( $n = 87$ ; 40%), and over \$100,000 ( $n = 40$ ; 18%). Four participants (2%) chose to not report on their annual household income. Almost half of participants reported they only had one child ( $n = 104$ , 48%) while 65 (30%) reported they had two children, 42 (19%) had three children, and 8 (4%) had four or more children.

Table 3. Residence of Participants

	<i>n</i>	Percentage
Colorado, Kentucky, Louisiana, Maine, Mississippi, New Mexico, Rhode Island, South Dakota, West Virginia	1	0.5
Alabama, Arizona, Arkansas, Connecticut, Indiana, Nebraska	2	1
Iowa, Michigan, Missouri, New Hampshire, Oklahoma, South Carolina, Tennessee	3	1
Georgia, Illinois, Kansas, North Carolina	4	2
Minnesota, New Jersey, Ohio, Oregon	5	2
Massachusetts, Utah, Washington	6	3
Pennsylvania, Virginia	7	3
Maryland	9	4
Florida, Texas	12	6
New York	18	8
California	28	13
Do Not Live in United States	3	1
Did Not Report	27	12

Table 4. Demographic Characteristics of Participants

	<i>n</i>	Percentage
<b>Parent Gender</b>		
Male	125	57
Female	94	43
<b>Parent Race</b>		
American Indian or Alaska Native	8	4
Asian American	14	6
African American	15	7
Native Hawaiian or Other Pacific Islander	9	4
White	162	74
Multiracial	11	5
<b>Parent Ethnicity</b>		
Not Hispanic/Latino	188	86
Cuban	11	5
Mexican	14	6
Puerto Rican	6	3
<b>Parent Marital Status</b>		
Single	5	2
Single, Living with Partner	1	0.5
Married	201	92
Divorced	11	5
Widowed	1	0.5
<b>Parent Education</b>		
High School Graduate	3	1
Some College	51	23
College Graduate	108	49
Masters Degree	49	22
Doctoral Degree	7	3
Other Professional Degree	1	0.5
<b>Annual Household Income</b>		
Under \$20,000	6	3
\$20,000-40,000	4	2
\$40,000-60,000	12	6
\$60,000-80,000	66	30
\$80,000-100,000	87	40
Over \$100,000	40	18
Did Not Report	4	2
<b>Relationship to Child</b>		
Biological Parent	186	87
Adoptive Parent	22	10
Step Parent	7	3



Parents were also asked to report on their own mental health (Table 5). Fifty-two percent of participants ( $n = 114$ ) reported they had been diagnosed with at least one mental health disorder while 48% ( $n = 105$ ) reported they had never been diagnosed with a mental health disorder. Of the 114 parents who reported they had been diagnosed with a mental health disorder, more than half reported they had been diagnosed with more than one mental health disorder: 43 (38%) reported one diagnosed disorder, 15 (13%) reported two disorders, 32 (28%) reported three disorders, and 24 (21%) reported four disorders. The most common parent diagnoses were ADHD ( $n = 77$ ; 35%), an anxiety disorder ( $n = 76$ ; 35%), Bipolar disorder ( $n = 62$ ; 28%), and depression ( $n = 45$ ; 21%).

Parents were also asked questions about their child with ADHD. If parents had more than one child with ADHD, they were asked to consider the child who had been diagnosed with ADHD for the greatest period of time when answering questions. Four parents exited the survey before reporting this information; therefore data are available for 215 participants. The majority of parents reported they were the biological parent of their child who had ADHD ( $n = 186$ ; 87%), with the rest being an adoptive parent

Table 5. Diagnoses Reported by Parents for Themselves

	$n^1$	Percentage <sup>2</sup>
Anxiety Disorder	76	35
Attention-Deficit/Hyperactivity Disorder	77	35
Bipolar Disorder	62	28
Depression	45	21
Substance Use Disorder	5	2

<sup>1</sup> Participants could indicate multiple diagnoses, therefore numbers do not total to the number of parents who indicated they had at least one diagnoses ( $n = 114$ ).

<sup>2</sup> Percentage is based on the total sample ( $n = 219$ ).

( $n = 22$ ; 10%) or step parent ( $n = 7$ ; 3%). The mean age of the child with ADHD was 8.31 ( $SD = 3.20$ ), with a range of 3 to 36 years old. However, the majority of participants were parents of school-aged children, with the median child age being eight years old. In addition, only two parents reported their child was over 18 years old.

The original survey posting unintentionally omitted child gender from the demographic measure. After this error was detected by the researcher, an updated survey was created and posted to each Internet group. However, due to this error in the survey, information on child gender was obtained for only 96 participants. Of these participants, 70 (73%) reported their child with ADHD was male while 26 (12%) reported their child was female.

Participants were asked to provide information about their child's ADHD diagnosis and any co-occurring diagnoses. Ninety-nine percent of participants reported their child was diagnosed with ADHD by a professional ( $n = 212$ ). Of the parents who indicated their child was diagnosed with ADHD by a professional, over half were diagnosed by one professional ( $n = 119$ , 56%), 72 (34%) were diagnosed by two professionals, 20 (9%) were diagnosed by three professionals, and 1 (0.5%) was diagnosed by four professionals. Over half of parents reported their child was diagnosed by a pediatrician or family doctor ( $n = 109$ ; 51%), 90 (42%) parents reported their child was diagnosed by a psychiatrist, 56 (26%) were diagnosed by a therapist or social worker with a Master's degree, 66 (31%) were diagnosed by a psychologist, and 6 (3%) were diagnosed by some other professional (e.g., pediatric neurologist, developmental pediatrician). Parents were also asked to report on the age of their child when he or she

was diagnosed with ADHD and the mean age was 6.27 years old ( $SD = 2.04$ ), with the range being between 1 and 14 years old and the median age being 6 years old.

Finally, parents were asked to report about co-occurring diagnoses their child had received in addition to ADHD (Table 6). Seventy-eight (36%) parents reported their child had no co-occurring diagnoses. Of the 137 remaining parents, 58 (27%) reported their child had one co-occurring diagnosis, 27 (12%) reported their child had two co-occurring diagnoses, 20 (9%) had three co-occurring diagnoses, 13 (6%) had four co-occurring diagnoses, 18 (8%) had five co-occurring diagnoses, and 1 (0.5%) reported their child had six co-occurring diagnoses. The most common co-occurring diagnoses reported by

Table 6. Parent-Reported Diagnostic Characteristics of Their Child with ADHD

	<i>n</i>	Percentage <sup>2</sup>
<b>Child Diagnosed with ADHD by a Professional</b>		
Yes	212	99
No	3	1
<b>Professional Who Diagnosed Child with ADHD<sup>1</sup></b>		
Therapist or Social Worker with a Master's Degree	56	26
Pediatrician or Family Doctor	109	51
Psychiatrist	90	42
Psychologist	66	31
Other Professional	6	3
<b>Co-Occurring Child Diagnoses<sup>1</sup></b>		
Anxiety Disorder	74	34
Asperger's Disorder	2	1
Bipolar Disorder	39	18
Conduct Disorder	74	34
Depression	61	28
Learning Disorder	38	18
Obsessive Compulsive Disorder	1	0.5
Oppositional Defiant Disorder	31	14
Sensory Integration Disorder	1	0.5
Speech Disorder	1	0.5

<sup>1</sup> Participants could indicate multiple responses.

<sup>2</sup> Percentage is based on the total sample ( $n = 215$ ).

parents were: anxiety disorders ( $n = 74$ ; 34%), Conduct Disorder ( $n = 74$ ; 34%), and depression ( $n = 61$ ; 28%).

### Research Question 2

Parents were asked to select their primary reasons for joining an Internet support group from a list of possible choices. They also had the opportunity to write in a response if one of their reasons was not listed. Six parents exited the survey before completing these items; therefore results are presented for 213 parents in Table 7.

Parents were first asked to indicate their top three reasons for joining an Internet support group. The most common reasons reported were: obtain information about ADHD ( $n = 173$ ; 81%), obtain information about treatments for ADHD ( $n = 160$ ; 75%), and to connect with other parents ( $n = 160$ ; 75%). Parents were then asked to select their top reason for joining an Internet support group. The top reason most frequently selected

Table 7. Reasons Parents Joined an Internet Support Group

	<i>n</i>	Percentage
<b>Top 3 Reasons<sup>1</sup></b>		
Obtain Information About ADHD	173	81
Connect with Other Parents	160	75
Obtain Information About Treatments for ADHD	160	75
Share Story with Other Parents	71	33
Have an Outlet or Place to Vent	62	29
Other	2	1
<b>Top Reason</b>		
Obtain Information About Treatments for ADHD	77	36
Obtain Information About ADHD	68	32
Connect with Other Parents	44	21
Share Story with Other Parents	13	6
Have an Outlet or Place to Vent	10	5
Other	1	0.5

<sup>1</sup> Participants could select up to three responses, therefore responses do not total to 213.

was to obtain information about treatments for ADHD ( $n = 77$ ; 36%). Other reasons included: obtain information about ADHD ( $n = 68$ ; 32%), connect with other parents ( $n = 44$ ; 21%), share their story with other parents ( $n = 13$ ; 6%), have an outlet or place to vent ( $n = 10$ ; 5%), or some other reason ( $n = 1$ ; 0.5%).

Next, parents were asked to select their primary reasons for joining an Internet support group instead of a face-to-face group. If parents were also a member of a face-to-face support group, they were asked to report why they chose to join an Internet support group in addition to a face-to-face group. Results are presented in Table 8. First, parents were asked to select up to three reasons for joining an Internet support group instead of a face-to-face group. The most common reasons reported by parents were: general convenience associated with Internet groups (e.g., could access the group from work or

Table 8. Reasons Parents Joined an Internet Group Instead of a Face-to-Face Group

	<i>n</i>	Percentage
<b>Top 3 Reasons<sup>1</sup></b>		
Convenience	162	76
Unsure How to Find Face-to-Face Support Group	132	62
Group in Area Did Not Meet at Convenient Time/Place	121	57
Could be Anonymous	111	52
No Face-to-Face Group Available	68	32
Did not Consider Joining Face-to-Face Group	12	6
Other	7	4
<b>Top Reason</b>		
Convenience	72	34
Group in Area Did Not Meet at Convenient Time/Place	60	28
Unsure How to Find Face-to-Face Support Group	34	16
No Face-to-Face Group Available	22	10
Could be Anonymous	21	10
Did not Consider Joining Face-to-Face Group	2	1
Other	2	1

<sup>1</sup> Participants could select up to three responses, therefore responses do not total to 213.

home, could access the group at any time;  $n = 162$ ; 76%), uncertainty about how to find a face-to-face support group ( $n = 132$ ; 62%), a face-to-face group did not meet at a time or place that was convenient for the parent's schedule ( $n = 121$ ; 57%), and they could be anonymous online ( $n = 111$ ; 52%).

Finally, parents were asked to report their primary reason for joining an Internet support group instead of a face-to-face group. The most common reason selected was the overall convenience associated with Internet support groups ( $n = 72$ ; 34%). Other reasons reported were: a face-to-face group did not meet at a time or place that was convenient ( $n = 60$ ; 28%), parents were unsure how to find a face-to-face support group ( $n = 34$ ; 16%), there were no face-to-face groups were available ( $n = 22$ ; 10%), parents could be anonymous online ( $n = 21$ ; 10%), they did not consider joining a face-to-face group ( $n = 2$ ; 1%), or some other reason ( $n = 2$ ; 1%).

### **Research Question 3**

Parents were asked to indicate how often they experienced various positive and negative events in the Internet support group for parents of children with ADHD to which they belonged. Two hundred thirteen parents completed this measure. In general, parents reported experiencing positive events on several occasions (Table 9). Ninety-nine percent of parents ( $n = 210$ ) reported receiving helpful advice or information on at least one occasion, with 36% of the sample ( $n = 76$ ) reporting receiving helpful advice on more than five occasions. In addition to receiving advice from others, parents reported they were able to provide advice to others, with 97% of parents reporting they provided advice on at least one occasion. The positive experience reported with the least frequency was

being able to “vent” to the group, with only 78% of parents reporting being able to do this on at least one occasion. However, taken together, it appears that the majority of parents had at least one positive experience in the group.

Table 9. Positive Experiences of Parents in Internet Support Groups

	Never	One Time	1-3 Times	3-5 Times	> 5 Times
Received Helpful Advice/Information	3 (1%)	20 (9%)	67 (32%)	47 (22%)	76 (36%)
Shared Story with Group	31 (15%)	23 (11%)	45 (21%)	80 (38%)	34 (16%)
Felt Like Others Cared/Wanted to Help	31 (15%)	24 (11%)	51 (24%)	58 (27%)	49 (23%)
Able to “Vent” to Group	47 (22%)	27 (13%)	43 (20%)	60 (28%)	36 (17%)
Able to Provide Advice to Others	6 (3%)	23 (11%)	69 (32%)	78 (37%)	37 (17%)

On the other hand, negative events were reported with less frequency than positive events (Table 10). For example, 39% ( $n = 83$ ) of individuals reported being bullied by a group member on at least one occasion, 46% ( $n = 99$ ) reported being lied to by a group member at least once, 51% ( $n = 108$ ) reported having a miscommunication with others at least once, 52% ( $n = 111$ ) reported at least one instance of having technical problems with the group, 53% ( $n = 112$ ) reported witnessing or being part of an argument between group members at least once, and 57% ( $n = 122$ ) reported a group member was bossy or overly opinionated on at least one occasion. These results indicate that although negative events occur with less frequency than positive events, many parents have experienced a negative event at least once while participating in an Internet support group.

Table 10. Negative Experiences of Parents in Internet Support Groups

	Never	One Time	1-3 Times	3-5 Times	> 5 Times
Group Member Lied	114 (54%)	23 (11%)	21 (10%)	13 (6%)	42 (20%)
Miscommunication with Others	105 (49%)	24 (11%)	25 (12%)	13 (6%)	46 (22%)
Technical Problems	102 (48%)	29 (14%)	28 (13%)	15 (7%)	39 (18%)
Group Members Bossy/Overly Opinionated	91 (43%)	31 (15%)	27 (13%)	18 (8%)	46 (22%)
Group Members Argued	101 (47%)	25 (12%)	28 (13%)	22 (10%)	37 (17%)
Bullied by Group Member(s)	130 (61%)	10 (5%)	21 (10%)	30 (14%)	22 (10%)

Due to the fact that three of the groups from which participants were recruited were moderated and three were not moderated, exploratory analyses were conducted to compare scores on the positive and negative experience scales to determine if the average score on each scale differed between groups that were and were not moderated. Because this measure was created for the current study, reliability analyses were conducted. The positive and negative experiences scales each yielded adequate reliability statistics ( $\alpha = 0.83$  and  $\alpha = 0.97$ , respectively), indicating satisfactory internal consistency for these scales. Results from an independent samples *t*-test indicated that there were significant differences between groups. For the positive experiences scale, participants in groups that were not moderated reported a significantly greater occurrence of positive events in the group when compared to groups that were moderated ( $M = 3.78$  and  $3.09$ , respectively;  $t[211] = 5.73$ ,  $p < .001$ ). However, for the negative experiences scale, participants in groups that were not moderated also reported a significantly greater occurrence of negative events in the group ( $M = 3.30$  and  $1.51$ , respectively;  $t[211] = 11.41$ ,  $p < .001$ ). Thus, non-moderated groups appear to have more variability in experiences, with



members of non-moderated groups reporting more positive and negative events than members of moderated groups.

#### **Research Question 4**

Using parent responses on the Previous Treatment Experiences questionnaire, treatment use typologies were created. The frequency of each typology was as follows: (1) Internet support group only ( $n = 1$ ), (2) Internet support group and medication ( $n = 3$ ), (3) Internet support group and therapy ( $n = 50$ ), and (4) Internet support group, medication, and therapy ( $n = 159$ ). Due to the limited number of participants who reported they used only the Internet support group or used medication in addition to the Internet support group, independent samples  $t$ -tests were conducted to determine if the two most frequent treatment use typologies (i.e., Internet support group and therapy; Internet support group, medication, and therapy) were associated with differences in child ADHD symptoms, parenting stress (experience and degree), and parental depressive symptoms.

Results indicated that parents associated with the two treatment typologies did not significantly differ on several of the social support scales (enacted support from family, perceived support from family, friends, or the Internet support group), parental depressive symptoms, or the amount of parenting stress experienced. However, the groups did significantly differ on child ADHD symptoms,  $t(197) = -5.29, p < .001$ , enacted support from friends,  $t(197) = -2.85, p < .01$ , enacted support from the Internet support group,  $t(197) = -3.67, p < .001$ , and degree of parenting stress,  $t(201) = -6.00, p < .001$ . These analyses indicated that, when compared to parents who received both therapy and

medication services for their child, parents who received only therapy also reported fewer ADHD symptoms for their child, less enacted support from their friends, less enacted support from the Internet support group, and a lesser degree of parenting stress.

In addition to exploring differences between treatment typologies, an exploratory factor analysis was conducted to determine if the individual items from the Previous Treatment Experiences questionnaire could be used to create scales comprising unique factors. Using a Principal Component Analysis with Varimax rotation, only one factor emerged. The following items loaded on the first factor (as indicated by a correlation of greater than 0.50): behavior chart ( $r = .55$ ), yelling ( $r = .69$ ), removal of privileges ( $r = .70$ ), time out ( $r = .53$ ), individual therapy for the child ( $r = .57$ ), and medication ( $r = .73$ ). Therefore, these items were combined to form a composite previous treatment score and this score was included as a covariate in analyses for Hypothesis 2 and 3.

### **Relation between Demographic, Independent, and Dependent Variables**

Pearson product-moment correlations were calculated to determine if several demographic factors (income, parent education, parent age, child age) were related to child ADHD symptoms, parenting stress (DBSI Stress Experience scale and DBSI Stress Degree scale), parental depressive symptoms (from the CES-D), and social support (enacted and perceived). Independent samples *t*-tests were also conducted to explore the relation between dichotomous demographic factors (parent gender, child gender, married/not married) and the independent and dependent variables listed above.

Some of the demographic variables were significantly correlated with each other (Table 11). The parent's level of education was significantly correlated with household

income ( $r = .25, p < .001$ ), indicating that higher levels of education was associated with greater household income. In addition, child age and parent age were significantly correlated ( $r = .49, p < .001$ ), indicating that older parent age was associated with older child age.

Parent income was significantly correlated with several variables (Table 11 and 12): child ADHD symptoms ( $r = -.19, p < .01$ ), DBSI Stress Degree scale ( $r = -.34, p < .001$ ), enacted social support from friends ( $r = .17, p < .01$ ), and perceived support from the Internet support group ( $r = -.21, p < .01$ ). This indicates that greater income was associated with fewer child ADHD symptoms, a lower degree of parenting stress, greater enacted support (i.e., received support more frequently) from friends, and less perceived support (i.e., less satisfied with the amount of support received) from the Internet support group.

Significant correlations were found between parent level of education and several independent and dependent variables (Table 11 and 12): the DBSI Stress Degree scale ( $r = .19, p < .01$ ), enacted support from friends ( $r = .34, p < .001$ ) and the Internet support group ( $r = .18, p < .01$ ), and perceived support from family ( $r = -.32, p < .001$ ), friends ( $r = -.28, p < .001$ ), and the Internet support group ( $r = -.34, p < .001$ ). These correlations indicate that in this sample, a higher level of education for the parent was associated with a greater degree of parenting stress. A higher level of education was also associated with greater enacted support from friends and the Internet support group. However, a higher education level was negatively associated with perceived support from family, friends, and the Internet support group, indicating that parents reporting higher levels of

education also reported being less satisfied with the amount of support they received from family, friends, and the Internet support group.

Parent and child age were also examined (Table 11 and 12). Significant correlations were found between parent age and parental depressive symptoms ( $r = -.27$ ,  $p < .001$ ), the DBSI Stress Experienced scale ( $r = -.24$ ,  $p < .001$ ), the DBSI Stress Degree scale ( $r = .23$ ,  $p < .01$ ), as well as perceived support from friends ( $r = .19$ ,  $p < .01$ ) and the Internet support group ( $r = .19$ ,  $p < .01$ ). This indicates that older parent age was associated with less parental depressive symptoms, fewer stressful parenting events (i.e., DBSI Stress Experienced), but a greater degree of parenting stress. In addition, older parent age was associated with greater satisfaction with the amount of social support received from friends and the Internet support group. Child age was also significantly correlated with the DBSI Stress Experienced scale ( $r = -.33$ ,  $p < .001$ ) and enacted support from the Internet support group ( $r = .19$ ,  $p < .01$ ). In other words, older child age was associated with fewer stressful parenting events and greater enacted support from the Internet support group.

Correlations between the scales on the MDSS social support measure were also explored and several significant correlations emerged. For the enacted support scale, enacted support from family was significantly correlated with enacted support from friends ( $r = .57$ ,  $p < .001$ ) and the Internet support group ( $r = .35$ ,  $p < .001$ ) and enacted support from friends was significantly correlated with enacted support from the Internet support group ( $r = .33$ ,  $p < .001$ ). Taken together, these results indicate that a greater frequency of support-seeking from one source is associated with greater support-seeking

from other sources. Similar results were found for perceived support: perceived support from family was significantly correlated with perceived support from friends ( $r = .68$ ,  $p < .001$ ) and the Internet support group ( $r = .68$ ,  $p < .001$ ) and perceived support from friends was correlated with perceived support from the Internet support group ( $r = .62$ ,  $p < .001$ ). These correlations indicate that satisfaction with support received from one source is highly associated with satisfaction with support received from other sources.

Several significant correlations also emerged between enacted and perceived support (Table 12): enacted support from family was correlated with perceived support from the Internet support group ( $r = -.27$ ,  $p < .001$ ), enacted support from friends was correlated with perceived support from family ( $r = -.30$ ,  $p < .001$ ) and the Internet support group ( $r = -.54$ ,  $p < .001$ ), and enacted support from the Internet support group was correlated with perceived support from family ( $r = -.30$ ,  $p < .001$ ), friends ( $r = -.32$ ,  $p < .001$ ), and the Internet support group ( $r = -.19$ ,  $p < .01$ ). These findings indicate that in general, greater support-seeking was associated with less satisfaction with support received (e.g., greater support seeking from the Internet support group was associated with less satisfaction with support received from family, friends, and the Internet support group).

Finally, correlations between the dependent variables (CES-D, DBSI Stress Degree, DBSI Stress Experienced) were conducted (Table 11). Scores on the CES-D and the DBSI Stress Experienced scale were significantly correlated ( $r = .33$ ,  $p < .001$ ). This suggests that greater depressive symptoms were associated with a greater number of stressful parenting events experienced.

Independent samples *t*-tests were also conducted to examine whether differences in scores on the independent and dependent variables existed between mothers and fathers, parents of girls and boys, and parents who were and were not married. When comparing mothers and fathers, significant differences were found for child ADHD symptoms,  $t(200) = -3.62, p < .001$ , amount of parenting stress experienced,  $t(205) = 2.75, p < .01$ , and degree of parenting stress,  $t(205) = -6.61, p < .001$ . When compared to mothers, fathers reported fewer ADHD symptoms for their child, a greater amount of parenting stress experienced, and a lower degree of parenting stress. Parents of boys were also compared with parents of girls and no significant differences emerged. In addition, no significant differences were found between parents who were or were not married.

Table 11. Pearson Product-Moment Correlations between Demographic Variables, Child ADHD Symptoms, Parenting Stress, and Parental Depressive Symptoms

	Income	Edu- cation	Parent Age	Child Age	ADHD Symptoms	DBSI Exper- ienced	DBSI Degree
Education	.25**						
Parent Age	.15	.16					
Child Age	.13	.22*	.49**				
ADHD Symptoms	-.19*	.09	.13	.11			
DBSI Experienced	.09	-.01	-.24**	-.33**	-.08		
DBSI Degree	-.34**	.19*	.23*	.16	.64**	-.01	
CES-D	-.08	.09	-.27**	.00	.30**	.33**	.16

*Note.* DBSI = Disruptive Behavior Stress Inventory; CES-D = Center for Epidemiologic Studies Depression Scale.

\*  $p < .01$     \*\*  $p < .001$

Table 12. Pearson Product-Moment Correlations between Demographic and Social Support Variables

	Income	Edu- cation	Parent Age	Child Age	MDSS Family Enacted	MDSS Family Perceived	MDSS Friend Enacted	MDSS Friend Perceived	MDSS ISG Enacted
Education	.25**								
Parent Age	.15	.16							
Child Age	.13	.22*	.49**						
MDSS Family Enacted	.17	.15	-.10	.04					
MDSS Family Perceived	-.06	-.32**	.09	-.01	-.06				
MDSS Friend Enacted	.17*	.34**	-.06	-.00	.57**	-.30**			
MDSS Friend Perceived	-.08	-.28**	.19*	.07	-.17	.68**	-.16		
MDSS ISG Enacted	.04	.18*	.01	.19*	.35**	-.30**	.33**	-.32**	
MDSS ISG Perceived	-.21*	-.34**	.19*	.07	-.27**	.68**	-.54**	.62**	-.19*

*Note.* MDSS = Multi-Dimensional Support Scale; ISG = Internet support group.

\*  $p < .01$  \*\*  $p < .001$

### Comparing Sample to Previous Samples

Independent samples *t*-tests were conducted to compare the sample mean on the measures of parental depressive symptoms and parenting stress with the sample mean from previous research conducted with parents of children with ADHD. For the Center for Epidemiologic Studies Depression Scale (CES-D), the mean obtained in this study ( $M = 22.43, SD = 8.21$ ) was compared with the mean obtained in a previous study ( $M = 6.98, SD = 6.78$ ) that recruited parents from a child psychiatric outpatient clinic (van der Oord et al., 2005). For the Disruptive Behavior Stress Inventory (DBSI), the means obtained on the Stress Experience scale ( $M = 29.57, SD = 7.43$ ) and the Stress Degree scale ( $M = 76.99, SD = 23.97$ ) were compared with the means obtained from a sample recruited from an outpatient ADHD clinic (Stress Experience scale:  $M = 21.92, SD = 8.34$ ; Stress Degree scale:  $M = 40.45, SD = 22.92$ ; Reader et al., 2009). Independent samples *t*-tests, which were conducted by hand, indicated that the sample mean in the current study was significantly greater than that of previous samples on the CES-D,  $t(329) = 10.31, p < .001$ , the DBSI Stress Experience scale,  $t(329) = 13.64, p < .001$ , and the DBSI Stress Degree scale,  $t(270) = 13.61, p < .001$ . These findings indicate that parents in the current study reported experiencing significantly greater depressive symptoms and parenting stress when compared to previous samples of parents of children with ADHD.

Necessary data (i.e., means, standard deviations) were not available to compare the mean scores on measures of child symptoms and social support with previous samples. However, on the measure of child symptoms (the Vanderbilt ADHD Parent



Rating Scale), a mean score of 2.54 ( $SD = 0.43$ ) was obtained for the ADHD scale and a mean score of 2.12 ( $SD = 0.55$ ) was obtained on the ODD/CD scale. A single-item score of at least two on items on each scale is indicative of a diagnosis (Wolraich et al., 2003); therefore, the mean score indicates that the average parent reported clinically-elevated levels of ADHD symptoms for his or her child. In addition, the mean score on the ODD/CD scale indicates that the average parent also reported clinical levels of ODD/CD symptoms for his or her child.

Scores for enacted social support from the Multi-Dimensional Support Scale (MDSS) were calculated by adding the parent's response for each of the seven items that comprised the scale. Parents were asked to rate on a 4-point scale (range: 1-4) the frequency with which they received different types of support; therefore, the minimum score was 7 and the maximum score was 28. Similar mean scores were obtained for enacted support received from family ( $M = 18.23$ ,  $SD = 2.99$ ), friends ( $M = 18.63$ ,  $SD = 3.99$ ) and the Internet support group ( $M = 18.40$ ,  $SD = 2.49$ ). To assess perceived support, parents were asked if they wanted to receive more, less, or the same amount of support they had received on each of the seven items of enacted support. A response of "same" was scored as a zero while a response of "more" or "less" was scored as a negative one; thus, possible scores ranged from zero to negative seven. Once again, the average scores were similar for perceived support received from family ( $M = -4.08$ ,  $SD = 1.96$ ), friends ( $M = -3.90$ ,  $SD = 1.81$ ), and the Internet support group ( $M = -3.81$ ,  $SD = 2.03$ ). Table 13 displays the mean and standard deviation of each independent and dependent variable.

Table 13. Means and Standard Deviations of Independent and Dependent Variables

	<i>M</i>	<i>SD</i>
<b>Independent Variables</b>		
Child ADHD Symptoms	2.54	0.43
Child ODD/CD Symptoms	2.12	0.55
MDSS Family Enacted Support	18.23	2.99
MDSS Friend Enacted Support	18.63	3.99
MDSS Internet Support Group Enacted Support	18.40	2.49
MDSS Family Perceived Support	-4.08	1.96
MDSS Friend Perceived Support	-3.90	1.81
MDSS Internet Support Group Perceived Support	-3.81	2.03
<b>Dependent Variables</b>		
CES-D	22.43	8.21
DBSI Stress Experienced	29.57	7.43
DBSI Stress Degree	76.99	23.97

*Note.* Multi-Dimensional Support Scale; DBSI = Disruptive Behavior Stress Inventory; CES-D = Center for Epidemiologic Studies Depression Scale.

### Hypothesis 1

Multiple regression analyses employing a hierarchical stepwise procedure were used to explore the relation between child ADHD symptoms and three dependent variables (DVs): parenting stress experienced, degree of parenting stress, and parental depressive symptoms. In the first block, the length of time parents took to complete the survey was entered into the model. Using the forward selection technique, the following covariates were included in the second block: parent income, parent level of education, parent gender, parent age, and child age. Child ADHD symptoms were entered into the third block. In moderator analyses (Hypothesis 1c and 1d), the forward selection technique was used and child ADHD and ODD/CD symptoms were included. Finally, the interaction term was entered in the fourth block. Results are presented for each DV.

## Parenting Stress Experienced

Regressions for Hypotheses 1a and 1c are presented in Table 14. There was a significant main effect for the length of time parents took to complete the survey,  $\beta = -.35$ ;  $t(197) = -5.27$ ,  $p < .001$ . In other words, parents who took less time to complete the survey reported greater levels of parenting stress experienced. The following covariates also yielded significant main effects: child age,  $\beta = -.32$ ;  $t(196) = -4.98$ ,  $p < .001$  and parent income,  $\beta = .17$ ;  $t(195) = 2.65$ ,  $p < .01$ . This suggests that parents with younger children reported greater levels of parenting stress, as did parents who reported higher levels of income. Parent gender, parent age and parent education did not yield a significant main effect. In addition, child ADHD symptoms did not yield a significant main effect. Thus, the hypothesis that greater child ADHD symptoms would be associated with greater levels of parenting stress experienced was not supported.

Hypothesis 1c explored the potential moderating effect of child ODD and CD symptoms on the relation between child ADHD symptoms and parenting stress experienced. Findings for the covariates were the same as mentioned above. When using the forward selection technique with the independent variables, child ODD/CD symptoms entered the regression first and yielded a significant main effect,  $\beta = .20$ ;  $t(191) = 2.98$ ,  $p < .01$ , suggesting that higher levels of child ODD/CD symptoms were associated with greater levels of parenting stress experienced. On the other hand, child ADHD symptoms did not yield a significant main effect. In addition, the interaction between child ADHD and ODD/CD symptoms was not significant, indicating that the

relation between child ADHD symptoms and parenting stress experienced did not differ as a function of child ODD/CD symptoms.

Table 14. Child ADHD and ODD Symptoms Predicting Parenting Stress Experienced

Step		$\beta$	$t$	$R^2$	$R^2\Delta$	$F\Delta$
1	Time to Complete Survey	-.35	-5.27**	.35	.12	27.73**
2	Child Age	-.32	-4.98**	.47	.10	24.78**
3	Parent Income	.17	2.65*	.50	.03	7.01*
4	Parent Gender	-.13	-2.08	.52	.02	4.31
5	Parent Age	-.03	-0.40	.52	.00	0.15
6	Parent Education	.02	0.27	.52	.00	0.07
7	Child ODD/CD Symptoms	.20	2.98*	.55	.03	8.90*
8	Child ADHD Symptoms	-.13	-1.89	.56	.01	3.58
9	ADHD X ODD/CD Symptoms	-.17	-2.42	.58	.01	5.86

Note. Overall  $F$ -value for the model = 10.45,  $p < .001$ .

\*  $p < .01$  \*\*  $p < .001$

### Degree of Parenting Stress

Regressions for Hypotheses 1a and 1c are presented in Table 15. There was a significant main effect for the length of time parents took to complete the survey,  $\beta = -.22$ ;  $t(197) = -3.12$ ,  $p < .01$ ; parents who took less time reported a greater degree of parenting stress. The following covariates also yielded significant main effects: parent gender,  $\beta = .41$ ;  $t(196) = 6.48$ ,  $p < .001$ ; parent education,  $\beta = .24$ ;  $t(195) = 3.92$ ,  $p < .001$ ; parent income,  $\beta = -.26$ ;  $t(194) = -4.17$ ,  $p < .001$ ; and parent age,  $\beta = .17$ ;  $t(193) = 2.67$ ,  $p < .01$ . These findings indicate that mothers reported a greater degree of parenting stress. In addition, higher levels of education, lower levels of income, and greater parent age were associated with a greater degree of parenting stress. Child age did not yield a significant main effect. For Hypothesis 1a, child ADHD symptoms yielded a significant

main effect,  $\beta = .49$ ;  $t(192) = 9.66$ ,  $p < .001$ , indicating that greater levels of child ADHD symptoms were associated with a greater degree of parenting stress, which coincides with what was hypothesized.

Hypothesis 1c explored the potential moderating effect of child ODD and CD symptoms. Child ADHD symptoms yielded the same significant main effect reported above. Child ODD/CD symptoms did not yield a significant main effect, but a significant interaction between these variables was found,  $\beta = .19$ ;  $t(189) = 3.46$ ,  $p < .01$ .

Table 15. Child ADHD and ODD Symptoms Predicting Degree of Parenting Stress

Step		$\beta$	$t$	$R^2$	$R^2\Delta$	$F\Delta$
1	Time to Complete Survey	-.22	-3.12*	.22	.05	9.76*
2	Parent Gender	.41	6.48**	.46	.17	41.98**
3	Parent Education	.24	3.92**	.52	.06	15.38**
4	Parent Income	-.26	-4.17**	.58	.06	17.38**
5	Parent Age	.17	2.67*	.60	.02	7.15*
6	Child Age	.10	1.50	.60	.01	2.24
7	Child ADHD Symptoms	.49	9.66**	.76	.21	93.30**
8	Child ODD/CD Symptoms	-.07	-1.24	.78	.00	1.53
9	ADHD X ODD/CD Symptoms	.19	3.46	.78	.03	11.95*

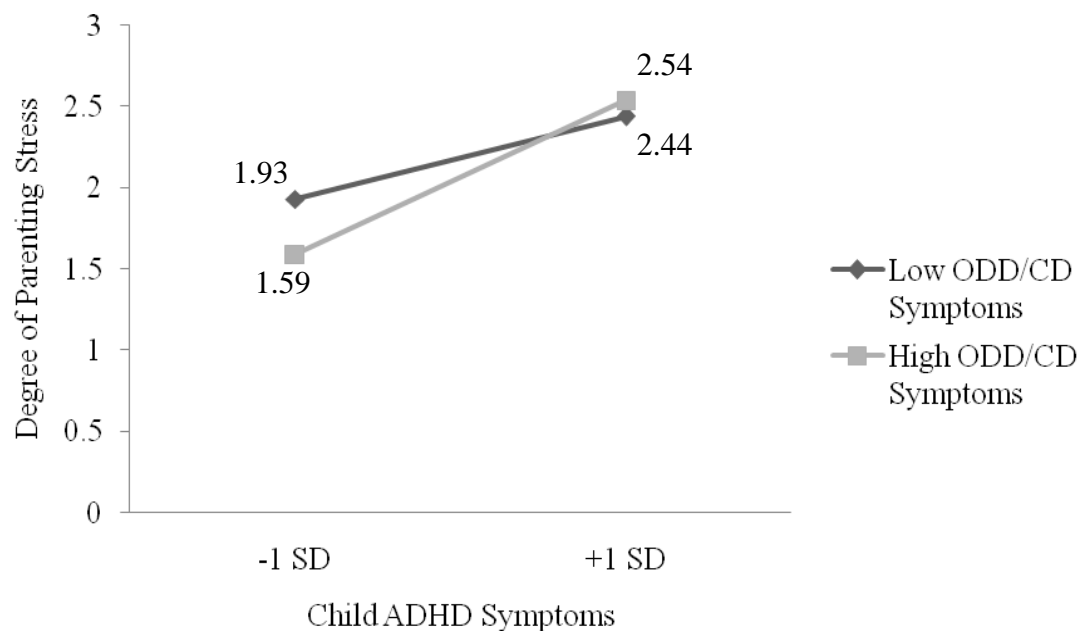
Note. Overall  $F$ -value for the model = 31.66,  $p < .001$ .

\*  $p < .01$  \*\*  $p < .001$

Post-hoc probing exploring the relation between child ADHD symptoms and degree of parenting stress under low and high conditions of child ODD/CD symptoms was conducted (Figure 4). Covariates were entered into the first step of the regression equation to control for the effect of the variables mentioned above. The main effect for child ADHD symptoms was significant under both low and high levels of ODD/CD symptoms:  $B = .47$ ,  $\beta = .38$ ;  $t(189) = 5.78$ ,  $p < .001$  and  $B = .87$ ,  $\beta = .71$ ;  $t(189) = 9.14$ ,

$p < .001$ . In other words, under both low and high conditions of child ODD/CD symptoms, child ADHD symptoms predicted degree of parenting stress. This was contrary to the hypothesis that child ADHD symptoms would be related to degree of parenting stress only under conditions of high ODD/CD symptoms.

Figure 4. Regression Lines for Relations between Child ADHD Symptoms and Degree of Parenting Stress as Moderated by Child ODD/CD Symptoms



### Parental Depressive Symptoms

Regressions for Hypotheses 1b and 1d are presented in Table 16. There was a significant main effect for the length of time parents took to complete the survey,  $\beta = -.24$ ;  $t(197) = -3.47$ ,  $p < .01$ , indicating that parents who took less time to complete the survey reported greater depressive symptoms. Parent age and child age also yielded significant effects,  $\beta = -.19$ ;  $t(196) = -2.81$ ,  $p < .01$  and  $\beta = .23$ ;  $t(195) = 2.94$ ,  $p < .01$ , respectively. This suggests that younger parents reported greater depressive symptoms, but parents of older children also reported greater depressive symptoms. Parent gender,

education and income did not yield significant main effects. For Hypothesis 1b, child ADHD symptoms yielded a significant main effect,  $\beta = .33$ ;  $t(191) = 5.00$ ,  $p < .001$ , indicating that greater levels of child ADHD symptoms were associated with greater levels of parental depressive symptoms, which supports what was hypothesized.

Hypothesis 1c explored the potential moderating effect of child ODD and CD symptoms. Child ADHD symptoms yielded the same significant main effect reported above. Child ODD/CD symptoms also yielded a significant main effect,  $\beta = .23$ ;  $t(190) = 3.19$ ,  $p < .01$ , indicating that greater child ODD/CD symptoms were associated with greater parental depressive symptoms. However, the interaction between child ADHD and ODD/CD symptoms was not significant. In other words, contrary to what was hypothesized, the relation between child ADHD symptoms and parental depressive symptoms did not vary as a function of child ODD/CD symptoms.

Table 16. Child ADHD and ODD Symptoms Predicting Parental Depressive Symptoms

Step		$\beta$	$t$	$R^2$	$R^2\Delta$	$F\Delta$
1	Time to Complete Survey	-.22	-3.12*	.24	.06	12.07*
2	Parent Gender	.41	6.48**	.31	.04	7.87*
3	Parent Education	.24	3.92**	.36	.04	8.67*
4	Parent Income	-.26	-4.17**	.38	.01	3.14
5	Parent Age	.17	2.67*	.39	.01	1.77
6	Child Age	.10	1.50	.40	.01	2.10
7	Child ADHD Symptoms	.49	9.66**	.51	.10	25.01**
8	Child ODD/CD Symptoms	-.07	-1.24	.55	.04	10.14*
9	ADHD X ODD Symptoms	.19	3.46	.55	.01	2.19

Note. Overall  $F$ -value for the model = 9.25,  $p < .001$ .

\*  $p < .01$     \*\*  $p < .001$

## **Summary**

Findings supported the hypothesis that greater child ADHD symptoms would be related to a higher degree of parenting stress (Hypothesis 1a) and greater parent depressive symptoms (Hypothesis 1b). However, child ADHD symptoms were not significantly related to parenting stress experienced (Hypothesis 1a), which is contrary to what was hypothesized. Although ODD/CD symptoms did not moderate the relation between child ADHD symptoms and parenting stress experienced (Hypothesis 1c) or parental depressive symptoms (Hypothesis 1d), a significant interaction between child ADHD and ODD/CD symptoms was detected in analyses examining degree of parenting stress (Hypothesis 1c). However, when the interaction was explored, greater child ADHD symptoms were associated with a higher degree of parenting stress under both low and high conditions of child ODD/CD symptoms. In other words, the hypothesis that child ADHD symptoms would be related to degree of parenting stress only under conditions of high ODD/CD symptoms was not supported.

## **Hypothesis 2**

Multiple regression analyses and a hierarchical stepwise procedure were used to explore the relation between participation in an Internet support group and degree of parenting stress as well as the potential moderating role of social support (enacted support for Hypothesis 2b and perceived support for Hypothesis 2c). Four participation variables were explored as IVs in separate analyses: (1) length of time in the group, (2) number of visits to the group per week during the past month, (3) number of hours



parents spent visiting the group per week in the past month, and (4) number of messages posted per week in the past month.

The forward selection technique was used in all analyses. The first step included the length of time parents took to complete the survey. Parent level of education, parent income, parent age, parent gender, and child age (which were significantly correlated with several of the social support variables) were entered in the second block. The third block included the following covariates: (1) enacted support from family, (2) enacted support from friends outside of the support group, (3) a composite scale of previous treatment use (from Research Question 4), (4) parenting stress experienced, and (5) child ADHD symptoms. The fourth block included one of the variables assessing parent participation in the Internet support group. In moderator analyses, the fourth block also included a social support variable (enacted support for Hypothesis 2b and perceived support for Hypothesis 2c) from the Internet support group. The fifth block included three two-way interaction terms (participation in group X Internet social support, child ADHD symptoms X Internet social support, participation in group X child ADHD symptoms) and the sixth block included the three-way interaction (participation in group X Internet social support X child ADHD symptoms). Results are presented for each parent participation variable.

Results for the covariates were identical in analyses for all parent participation variables; therefore, they will only be presented here and in the tables accompanying each analysis. There was a significant main effect for the length of time parents took to complete the survey,  $\beta = -.22$ ;  $t(197) = -3.12$ ,  $p < .01$ , indicating that parents who took

less time to complete the survey reported a greater degree of parenting stress. The following demographic variables also yielded significant effects: parent gender,  $\beta = .41$ ;  $t(196) = 6.48, p < .001$ , parent level of education,  $\beta = .24$ ;  $t(195) = 3.92, p < .001$ , parent income,  $\beta = -.26$ ;  $t(195) = -4.17, p < .001$ , and parent age,  $\beta = .17$ ;  $t(194) = 2.67, p < .01$ . This finding indicates that mothers reported a greater degree of parenting stress. Additionally, a greater degree of parenting stress was associated with higher levels of parent education, lower levels of parent income, and greater parent age. The effect for child age was not significant.

### **Length of Time in Group**

Hypothesis 2a examined the relation between the length of time parents participated in an Internet support group and degree of parenting stress, while controlling for several possible covariates. In addition to the demographic covariates mentioned above, the following covariates yielded significant main effects: child ADHD symptoms,  $\beta = .49$ ;  $t(192) = 9.66, p < .001$ , and previous treatment use,  $\beta = .33$ ;  $t(191) = 6.53, p < .001$ . This suggests that greater ADHD symptoms and greater levels of use of previous treatment techniques targeting the child's ADHD symptoms (i.e., behavior chart, yelling, removal of privileges, time out, individual therapy for child, medication) were both associated with a greater degree of parenting stress. Enacted support from friends outside of the support group, parenting stress experienced, and enacted support from family members did not yield significant effects. Contrary to what was hypothesized, the main effect for length of participation in the Internet support group was not significant.

Hypothesis 2b explored the potential moderating effect of enacted support from the Internet support group, and whether results differed as a function of child ADHD symptoms (Table 17). After controlling for the demographic covariates, two other covariates yielded significant effects: previous treatment use,  $\beta = .46$ ;  $t(191) = 8.20$ ,  $p < .001$ , and enacted support from friends outside of the support group,  $\beta = -.17$ ;  $t(190) = -2.90$ ,  $p < .01$ . This finding indicates that greater use of treatment strategies targeting the child's ADHD symptoms and lower levels of enacted support from friends was associated with a greater degree of parenting stress. Parenting stress experienced and enacted support from family did not yield significant effects. When examining the independent variables, child ADHD symptoms yielded a significant main effect,  $\beta = .38$ ;  $t(187) = 7.76$ ,  $p < .001$ , indicating that greater levels of child ADHD symptoms were associated with a higher degree of parenting stress. The other independent variables (enacted support from the Internet support group and length of time in the group) did not yield significant main effects. In addition, none of the two-way interactions were significant. However, a significant three-way interaction (length of participation in the group X enacted support from the Internet support group X child ADHD symptoms) emerged,  $\beta = -.13$ ;  $t(181) = -2.64$ ,  $p < .01$ .

Following the recommendations of Aiken and West (1991), post-hoc probes were conducted to explore the three-way interaction. Conditional values were computed for ADHD symptoms, length of participation in the support group, and their respective standard deviations to create a low and high term (i.e., one standard deviation below and above the mean) for each variable. In addition, appropriate crossproduct terms (i.e.,

interaction variables) were created. Covariates were entered in the first step of the regression equation and all other variables were entered in the second step of the regression equation. The regression of degree of parenting stress on enacted support was explored under four different conditions: (1) low ADHD symptoms and low participation, (2) low ADHD symptoms and high participation, (3) high ADHD symptoms and low

Table 17. Moderating Effect of Enacted Support from the Internet Support Group on Length of Participation in the Group Predicting Degree of Parenting Stress

Step		$\beta$	$t$	$R^2$	$R^2\Delta$	$F\Delta$
1	Time to Complete Survey	-.22	-3.12*	.22	.05	9.76*
2	Parent Gender	.41	6.48**	.46	.17	41.98**
3	Parent Education	.24	3.92**	.52	.06	15.38**
4	Parent Income	-.26	-4.17**	.58	.06	17.38**
5	Parent Age	.17	2.67*	.60	.02	7.15*
6	Child Age	.10	1.50	.60	.01	2.24
7	Previous Treatment Use	.46	8.20**	.73	.17	67.27**
8	Enacted Support from Friends	-.17	-2.90*	.74	.02	8.42*
9	Enacted Support from Family	-.02	-0.35	.74	.00	0.12
10	Parenting Stress Experienced	.00	.05	.74	.00	0.00
11	Child ADHD Symptoms	.38	7.76**	.81	.11	60.27**
12	Enacted Support from Internet Group	.02	0.33	.81	.00	0.11
13	Length of Participation in Internet Group	-.01	-0.28	.81	.00	0.08
14	ADHD Symptoms X Enacted Support from Internet Group	.12	2.24	.82	.01	5.02
15	Length of Participation X Enacted Support from Internet Group	.08	1.91	.82	.01	3.66
16	Length of Participation X ADHD Symptoms	-.01	-0.15	.82	.00	0.02
17	Length of Participation X Enacted Support From Internet Group X ADHD Symptoms	-.13	-2.64*	.83	.01	6.98*

Note. Overall  $F$ -value for the model = 23.42,  $p < .001$ .

\*  $p < .01$  \*\*  $p < .001$

participation, and (4) high ADHD symptoms and high participation. The simple slope was only significant in condition one (low ADHD symptoms and low participation):  $B = -.07, \beta = -.33; t(180) = -3.18, p < .01$  (Table 18 presents data for each condition). This means that under conditions of low ADHD symptoms and low length of participation (i.e., one standard deviation below the mean), enacted support is negatively associated with degree of parenting stress (Figure 5). In other words, participants with lower ADHD symptoms, a lesser length of time participating in the group, and lower enacted support from the group experience a greater degree of parenting stress when compared with parents who report lower ADHD symptoms for their child, a lesser length of time participating in the group, and greater enacted support from the group. This finding partially supports the hypothesis that enacted support would moderate the relation between length of participation in the group and degree of parenting stress.

Table 18. Standard Errors and *t*-Tests for Simple Slopes Exploring the Relation between Degree of Parenting Stress and Enacted Support

	Simple Slope ( <i>B</i> )	Standard Error of <i>B</i>	$\beta$	<i>t</i>
Low ADHD, Low Participation	-.07	.02	-.33	-3.18*
Low ADHD, High Participation	.02	.02	.08	0.75
High ADHD, Low Participation	.01	.02	.06	0.91
High ADHD, High Participation	.02	.02	.11	1.53

\*  $p < .01$

Hypothesis 2c explored the potential moderating effect of perceived support from the Internet support group, and whether results varied as a function of child ADHD symptoms (Table 19). After controlling for the demographic covariates, two other covariates yielded significant effects: previous treatment use,  $\beta = .46; t(191) = 8.20$ ,

Figure 5. Regression Lines for Relations between Child ADHD Symptoms and Degree of Parenting Stress as Moderated by Enacted Support Under a Condition of Low Length of Participation

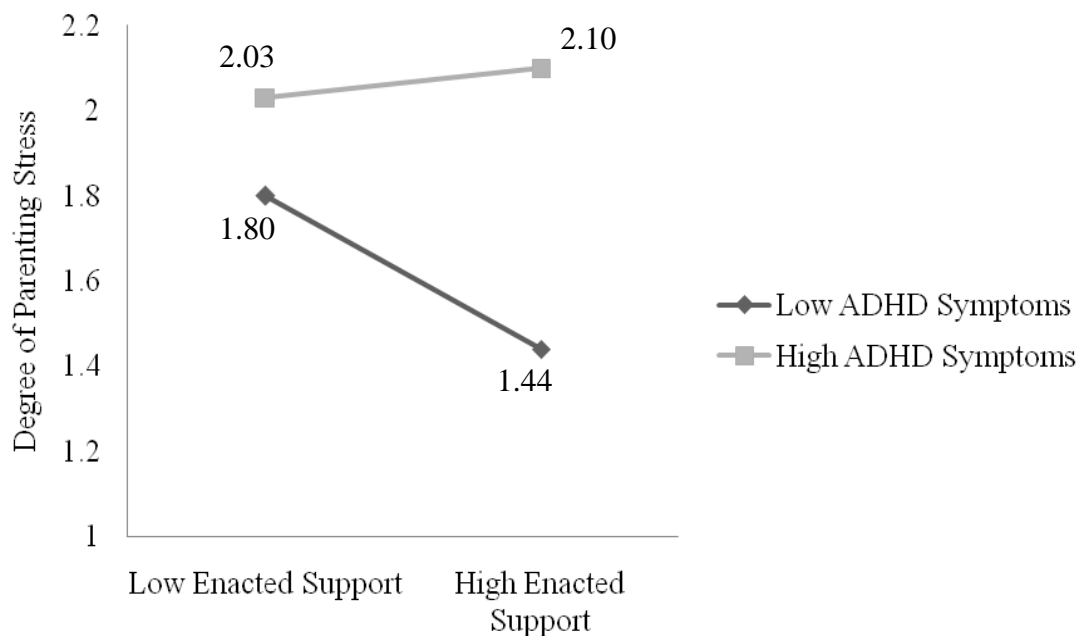
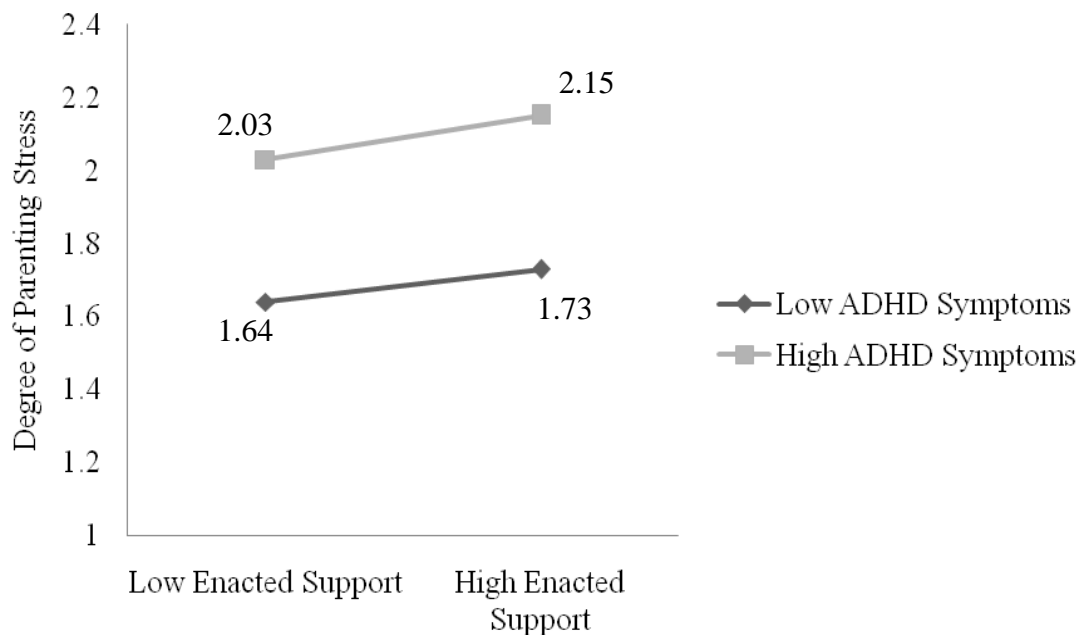


Figure 6. Regression Lines for Relations between Child ADHD Symptoms and Degree of Parenting Stress as Moderated by Enacted Support Under a Condition of High Length of Participation



$p < .001$ , and perceived support from family,  $\beta = -.18$ ;  $t(190) = -3.14$ ,  $p < .01$ . This finding indicates that parents who report using more techniques to treat their child's ADHD symptoms and parents who report being less satisfied with the support they receive from their family experience a greater degree of parenting stress. Amount of parenting stress experienced and perceived support from friends did not yield significant

Table 19. Moderating Effect of Perceived Support from the Internet Support Group on Length of Participation in the Group Predicting Degree of Parenting Stress

Step		$\beta$	$t$	$R^2$	$R^2\Delta$	$F\Delta$
1	Time to Complete Survey	-.22	-3.12*	.22	.05	9.76*
2	Parent Gender	.41	6.48**	.46	.17	41.98**
3	Parent Education	.24	3.92**	.52	.06	15.38**
4	Parent Income	-.26	-4.17**	.58	.06	17.38**
5	Parent Age	.17	2.67*	.60	.02	7.15*
6	Child Age	.10	1.50	.60	.01	2.24
7	Previous Treatment Use	.46	8.20**	.73	.17	67.27**
8	Perceived Support from Family	-.18	-3.14*	.74	.02	9.86*
9	Parenting Stress Experienced	-.11	-1.72	.75	.01	2.96
10	Perceived Support from Friends	-.02	-0.33	.75	.00	0.11
11	Child ADHD Symptoms	.39	8.05**	.82	.11	64.72**
12	Perceived Support from Internet Group	.16	2.28	.83	.01	5.21
13	Length of Participation in Internet Group	-.02	-0.43	.83	.00	0.19
14	Length of Participation X ADHD Symptoms	.05	1.12	.83	.00	1.25
15	ADHD Symptoms X Perceived Support from Internet Group	-.04	-0.68	.83	.00	0.47
16	Length of Participation X Perceived Support from Internet Group	-.01	-0.19	.83	.00	0.04
17	Length of Participation X Perceived Support From Internet Group X ADHD Symptoms	.14	1.99	.83	.01	3.96

Note. Overall  $F$ -value for the model = 23.92,  $p < .001$ .

\*  $p < .01$  \*\*  $p < .001$

effects. As for the independent variables, child ADHD symptoms yielded a significant main effect,  $\beta = .39$ ;  $t(187) = 8.05$ ,  $p < .001$ , which is consistent with the hypothesis that greater child ADHD symptoms would be associated with a greater degree of parenting stress. On the other hand, perceived support from the Internet support group and length of participation in the Internet support group did not yield significant main effects. In addition, no significant two- or three-way interactions emerged.

### **Number of Visits to Group per Week**

Hypothesis 2a examined the relation between the number of times parents reported visiting the Internet support group website per week and degree of parenting stress, while controlling for several possible covariates. Findings for the covariates were identical to those reported previously for length of time parents participated in the Internet support group. The main effect for visits to the Internet support group per week was not significant. Thus, the hypothesis that degree of parenting stress would be associated with the number of times parents visited an Internet support group per week was not supported.

Hypothesis 2b explored the potential moderating effect of enacted support from the Internet support group, and whether results differed as a function of child ADHD symptoms (Table 20). Findings for the covariates were the same as those reported above for analyses examining length of time parents participated in the Internet support group. When examining the independent variables, child ADHD symptoms yielded a significant main effect,  $\beta = .38$ ;  $t(187) = 7.76$ ,  $p < .001$ , indicating that greater child ADHD symptoms were related to a greater degree of parenting stress. Visits to the Internet



support group per week and enacted support from the Internet support group did not yield significant main effects. In addition, none of the two-way interactions yielded significant effects. However, a significant three-way interaction (visits per week X enacted support from the Internet support group X child ADHD symptoms) emerged,  $\beta = -.15$ ;  $t(181) = -2.80, p < .01$ .

Table 20. Moderating Effect of Enacted Support from the Internet Support Group on Visits per Week Predicting Degree of Parenting Stress

Step		$\beta$	$t$	$R^2$	$R^2\Delta$	$F\Delta$
1	Time to Complete Survey	-.22	-3.12*	.22	.05	9.76*
2	Parent Gender	.41	6.48**	.46	.17	41.98**
3	Parent Education	.24	3.92**	.52	.06	15.38**
4	Parent Income	-.26	-4.17**	.58	.06	17.38**
5	Parent Age	.17	2.67*	.60	.02	7.15*
6	Child Age	.10	1.50	.60	.01	2.24
7	Previous Treatment Use	.46	8.20**	.73	.17	67.27**
8	Enacted Support from Friends	-.17	-2.90*	.74	.02	8.42*
9	Enacted Support from Family	-.02	-0.35	.74	.00	0.12
10	Parenting Stress Experienced	.00	.05	.74	.00	0.00
11	Child ADHD Symptoms	.38	7.76**	.81	.11	60.27**
12	Visits Per Week	-.05	-0.96	.81	.00	0.91
13	Enacted Support from Internet Group	.02	0.33	.81	.00	0.11
14	ADHD Symptoms X Enacted Support from Internet Group	.12	2.08	.82	.01	4.32
15	Visits Per Week X ADHD Symptoms	-.05	-0.92	.82	.00	0.85
16	Visits Per Week X Enacted Support from Internet Group	-.03	-0.65	.82	.00	0.42
17	Visits Per Week X Enacted Support From Internet Group X ADHD Symptoms	-.15	-2.80*	.83	.01	7.82*

Note. Overall  $F$ -value for the model = 23.15,  $p < .001$ .

\*  $p < .01$  \*\*  $p < .001$

Post-hoc probes were conducted to explore the three-way interaction following the recommendations of Aiken and West (1991). The simple slope for the regression coefficient was not significant in any of the four conditions, although it approached significance in the condition of low ADHD symptoms and low participation:  $B = -.05$ ,  $\beta = -.21$ ;  $t(180) = -2.29$ ,  $p = .02$  (Table 21 presents data for each condition). This means that although the three-way interaction was significant, none of the regression equations yielded a significant simple slope (Figures 7 and 8). Thus, post-hoc probes did not provide meaningful information about the possible moderating influence of enacted support on the relation between visits to the group and degree of parenting stress.

Table 21. Standard Errors and  $t$ -Tests for Simple Slopes Exploring the Relation between Degree of Parenting Stress and Enacted Support

	Simple Slope ( $B$ )	Standard Error of $B$	$\beta$	$t$
Low ADHD, Low Visits per Week	-.05	.02	-.21	-2.29
Low ADHD, High Visits per Week	.02	.03	.08	0.57
High ADHD, Low Visits per Week	.03	.02	.12	1.62
High ADHD, High Visits per Week	.00	.02	.01	0.17

Hypothesis 2c explored the potential moderating effect of perceived support from the Internet support group, and whether results varied as a function of child ADHD symptoms (Table 22). Findings for the covariates were the same as those reported for analyses examining length of time parents participated in the Internet support group. When the independent variables were examined, child ADHD symptoms yielded a significant main effect,  $\beta = .39$ ;  $t(187) = 8.05$ ,  $p < .001$ . This is consistent with the hypothesis that greater child ADHD symptoms would be associated with a greater degree

Figure 7. Regression Lines for Relations between Child ADHD Symptoms and Degree of Parenting Stress as Moderated by Enacted Support Under a Condition of Low Visits per Week

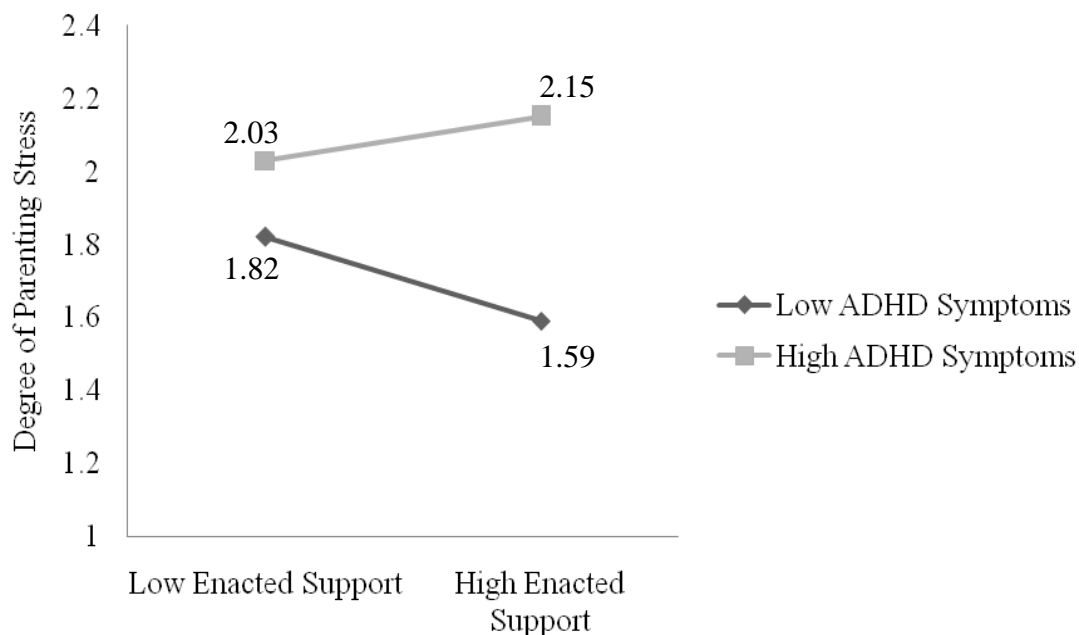
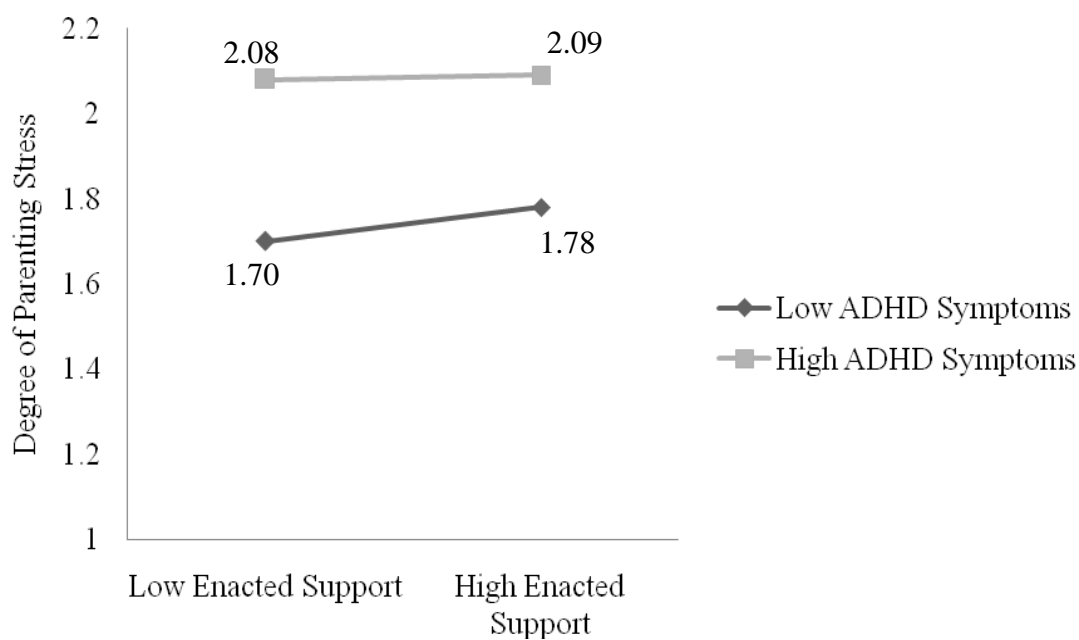


Figure 8. Regression Lines for Relations between Child ADHD Symptoms and Degree of Parenting Stress as Moderated by Enacted Support Under a Condition of High Visits per Week



of parenting stress. Perceived support from the Internet support group and number of visits to the Internet support group per week did not yield significant main effects and no significant two- or three-way interactions emerged.

Table 22. Moderating Effect of Perceived Support from the Internet Support Group on Visits per Week to an Internet Support Group Predicting Degree of Parenting Stress

Step		$\beta$	$t$	$R^2$	$R^2\Delta$	$F\Delta$
1	Time to Complete Survey	-.22	-3.12*	.22	.05	9.76*
2	Parent Gender	.41	6.48**	.46	.17	41.98**
3	Parent Education	.24	3.92**	.52	.06	15.38**
4	Parent Income	-.26	-4.17**	.58	.06	17.38**
5	Parent Age	.17	2.67*	.60	.02	7.15*
6	Child Age	.10	1.50	.60	.01	2.24
7	Previous Treatment Use	.46	8.20**	.73	.17	67.27**
8	Perceived Support from Family	-.18	-3.14*	.74	.02	9.86*
9	Parenting Stress Experienced	-.11	-1.72	.75	.01	2.96
10	Perceived Support from Friends	-.02	-0.33	.75	.00	0.11
11	Child ADHD Symptoms	.39	8.05**	.82	.11	64.72**
12	Perceived Support from Internet Group	.16	2.28	.83	.01	5.21
13	Visits per Week	-.06	-1.39	.83	.00	1.92
14	Visits per Week X Perceived Support from Internet Group	-.03	-0.64	.83	.00	0.40
15	ADHD Symptoms X Perceived Support from Internet Group	-.02	-0.45	.83	.00	0.20
16	Visits per Week X ADHD Symptoms	.01	0.18	.83	.00	0.03
17	Visits per Week X Perceived Support From Internet Group X ADHD Symptoms	.09	0.95	.83	.00	0.90

Note. Overall  $F$ -value for the model = 23.46,  $p < .001$ .

\*  $p < .01$  \*\*  $p < .001$

### **Number of Hours Visiting Group per Week**

Hypothesis 2a examined the relation between the number of hours per week parents reported spending reading and writing posts in the Internet support group and degree of parenting stress, while controlling for several covariates. Findings for the covariates were identical to those reported for length of time parents participated in the Internet support group. The main effect for hours spent reading or writing posts per week in the Internet support group was not significant.

Hypothesis 2b explored the potential moderating effect of enacted support from the Internet support group, and whether results differed as a function of child ADHD symptoms (Table 23). Findings for the covariates were the same as those reported for analyses examining length of time parents participated in the Internet support group. When examining the independent variables, a significant main effect was found for child ADHD symptoms,  $\beta = .38$ ;  $t(187) = 7.76$ ,  $p < .001$ , once again demonstrating that greater child ADHD symptoms were associated with a greater degree of parenting stress. The main effects for hours spent reading and writing posts and enacted support from the Internet support group were not significant. In addition, no significant two- or three-way interactions emerged.

Hypothesis 2c explored the potential moderating effect of perceived support from the Internet support group, and whether results varied as a function of child ADHD symptoms. Findings for the covariates were the same as those reported above for analyses examining length of time parents participated in the Internet support group. When the independent variables were examined, child ADHD symptoms yielded a significant main

Table 23. Moderating Effect of Enacted Support from the Internet Support Group on Hours Reading and Writing Posts per Week Predicting Degree of Parenting Stress

Step		$\beta$	$t$	$R^2$	$R^2\Delta$	$F\Delta$
1	Time to Complete Survey	-.22	-3.12*	.22	.05	9.76*
2	Parent Gender	.41	6.48**	.46	.17	41.98**
3	Parent Education	.24	3.92**	.52	.06	15.38**
4	Parent Income	-.26	-4.17**	.58	.06	17.38**
5	Parent Age	.17	2.67*	.60	.02	7.15*
6	Child Age	.10	1.50	.60	.01	2.24
7	Previous Treatment Use	.46	8.20**	.73	.17	67.27**
8	Enacted Support from Friends	-.17	-2.90*	.74	.02	8.42*
9	Enacted Support from Family	-.02	-0.35	.74	.00	0.12
10	Parenting Stress Experienced	.00	.05	.74	.00	0.00
11	Child ADHD Symptoms	.38	7.76**	.81	.11	60.27**
12	Hours Per Week	.11	2.11	.82	.01	4.44
13	Enacted Support from Internet Group	-.01	-0.12	.82	.00	0.01
14	ADHD Symptoms X Enacted Support from Internet Group	.13	2.35	.82	.01	5.52
15	Hours Per Week X Enacted Support from Internet Group	.08	1.64	.83	.01	2.68
16	Hours Per Week X ADHD Symptoms	.05	1.10	.83	.00	1.21
17	Hours Per Week X Enacted Support From Internet Group X ADHD Symptoms	-.07	-1.27	.83	.00	1.62

Note. Overall  $F$ -value for the model = 23.33,  $p < .001$ .

\*  $p < .01$  \*\*  $p < .001$

effect,  $\beta = .39$ ;  $t(187) = 8.05$ ,  $p < .001$ ; greater child ADHD symptoms were related to a greater degree of parenting stress. Perceived support from the Internet group and hours spent reading or writing posts did not yield significant effects. In addition, no significant two- or three-way interactions emerged. Complete data are presented in Table 24.

### Number of Messages Posted per Week

Hypothesis 2a examined the relation between the number of messages parents reported posting to the Internet support group per week and degree of parenting stress, while controlling for several possible covariates (results for the covariates were identical to those reported for length of time parents participated in the Internet support group).

The main effect for number of posts per week was not significant.

Table 24. Moderating Effect of Perceived Support from the Internet Support Group on Hours Reading and Writing Posts per Week Predicting Degree of Parenting Stress

Step		$\beta$	$t$	$R^2$	$R^2\Delta$	$F\Delta$
1	Time to Complete Survey	-.22	-3.12*	.22	.05	9.76*
2	Parent Gender	.41	6.48**	.46	.17	41.98**
3	Parent Education	.24	3.92**	.52	.06	15.38**
4	Parent Income	-.26	-4.17**	.58	.06	17.38**
5	Parent Age	.17	2.67*	.60	.02	7.15*
6	Child Age	.10	1.50	.60	.01	2.24
7	Previous Treatment Use	.46	8.20**	.73	.17	67.27**
8	Perceived Support from Family	-.18	-3.14*	.74	.02	9.86*
9	Parenting Stress Experienced	-.11	-1.72	.75	.01	2.96
10	Perceived Support from Friends	-.02	-0.33	.75	.00	0.11
11	Child ADHD Symptoms	.39	8.05**	.82	.11	64.72**
12	Perceived Support from Internet Group	.16	2.28	.83	.01	5.21
13	Hours per Week	.03	0.51	.83	.00	0.26
14	Hours per Week X ADHD Symptoms	.06	1.42	.83	.00	2.03
15	Hours per Week X Perceived Support from Internet Group	.01	0.27	.83	.00	0.08
16	Perceived Support from Internet Group X ADHD Symptoms	.00	0.03	.83	.00	0.00
17	Hours per Week X Perceived Support From Internet Group X ADHD Symptoms	.04	0.77	.83	.00	0.59

Note. Overall  $F$ -value for the model = 23.37,  $p < .001$ .

\*  $p < .01$     \*\*  $p < .001$

Hypothesis 2b explored the potential moderating effect of enacted support from the Internet support group, and whether results differed as a function of child ADHD symptoms (Table 25). Findings for the covariates were the same as those reported for analyses examining length of time parents participated in the Internet support group. When examining the independent variables, a significant main effect was found for child ADHD symptoms,  $\beta = .38$ ;  $t(187) = 7.76$ ,  $p < .001$ ; that is, greater child ADHD

Table 25. Moderating Effect of Enacted Support from the Internet Support Group on Posts per Week Predicting Degree of Parenting Stress

Step		$\beta$	$t$	$R^2$	$R^2\Delta$	$F\Delta$
1	Time to Complete Survey	-.22	-3.12*	.22	.05	9.76*
2	Parent Gender	.41	6.48**	.46	.17	41.98**
3	Parent Education	.24	3.92**	.52	.06	15.38**
4	Parent Income	-.26	-4.17**	.58	.06	17.38**
5	Parent Age	.17	2.67*	.60	.02	7.15*
6	Child Age	.10	1.50	.60	.01	2.24
7	Previous Treatment Use	.46	8.20**	.73	.17	67.27**
8	Enacted Support from Friends	-.17	-2.90*	.74	.02	8.42*
9	Enacted Support from Family	-.02	-0.35	.74	.00	0.12
10	Parenting Stress Experienced	.00	.05	.74	.00	0.00
11	Child ADHD Symptoms	.38	7.76**	.81	.11	60.27**
12	Posts Per Week	-.03	-0.62	.81	.00	0.38
13	Enacted Support from Internet Group	.03	0.47	.81	.00	0.22
14	ADHD Symptoms X Enacted Support from Internet Group	.12	2.20	.82	.01	4.85
15	Posts Per Week X ADHD Symptoms	-.05	-1.14	.82	.00	1.29
16	Posts Per Week X Enacted Support from Internet Group	.02	0.46	.82	.00	0.21
17	Posts Per Week X Enacted Support From Internet Group X ADHD Symptoms	-.11	-1.87	.82	.01	3.48

Note. Overall  $F$ -value for the model = 22.44,  $p < .001$ .

\*  $p < .01$  \*\*  $p < .001$



symptoms were associated with a greater degree of parenting stress. Posts per week and enacted support from the Internet support group did not yield significant main effects. No significant two- or three-way interactions were detected.

Hypothesis 2c explored the potential moderating effect of perceived support from the Internet support group, and whether results varied as a function of child ADHD symptoms (Table 26). Findings for the covariates were the same as those reported for analyses examining length of time parents participated in the Internet support group. When the independent variables were examined, child ADHD symptoms yielded a significant main effect,  $\beta = .39$ ;  $t(187) = 8.05$ ,  $p < .001$ , indicating that greater child ADHD symptoms were related to a greater degree of parenting stress. Perceived support from the Internet group and number of posts to the Internet support group per week did not yield a significant effect. No significant two- or three-way interactions emerged.

### **Summary**

Findings did not support the hypothesis that greater participation in the group would be associated with a lower degree of parenting stress (Hypothesis 2a); none of the participation variables yielded a significant main effect. In addition, in most cases neither enacted support nor perceived support from the Internet group moderated the relation between these variables (Hypothesis 2b and 2c, respectively). The one exception was the finding for the three-way interaction between child ADHD symptoms, length of participation in the group, and enacted support from the Internet support group. When this interaction was explored, it was found that under conditions of low ADHD symptoms and low length of participation (i.e., one standard deviation below the mean), enacted

support was negatively associated with degree of parenting stress. In other words, enacted support moderated the relation between length of participation in the group and parenting stress for those parents who reported fewer ADHD symptoms for their child and a shorter length of participation in the Internet support group. Furthermore, greater enacted support was associated with a lower degree of parenting stress in this group.

Table 26. Moderating Effect of Perceived Support from the Internet Support Group on Posts per Week Predicting Degree of Parenting Stress

Step		$\beta$	$t$	$R^2$	$R^2\Delta$	$F\Delta$
1	Time to Complete Survey	-.22	-3.12*	.22	.05	9.76*
2	Parent Gender	.41	6.48**	.46	.17	41.98**
3	Parent Education	.24	3.92**	.52	.06	15.38**
4	Parent Income	-.26	-4.17**	.58	.06	17.38**
5	Parent Age	.17	2.67*	.60	.02	7.15*
6	Child Age	.10	1.50	.60	.01	2.24
7	Previous Treatment Use	.46	8.20**	.73	.17	67.27**
8	Perceived Support from Family	-.18	-3.14*	.74	.02	9.86*
9	Parenting Stress Experienced	-.11	-1.72	.75	.01	2.96
10	Perceived Support from Friends	-.02	-0.33	.75	.00	0.11
11	Child ADHD Symptoms	.39	8.05**	.82	.11	64.72**
12	Perceived Support from Internet Group	.16	2.28	.83	.01	5.21
13	Posts per Week	-.08	-1.56	.83	.00	2.44
14	Posts per Week X Perceived Support from Internet Group	-.08	-1.59	.83	.00	2.51
15	Perceived Support from Internet Group X ADHD Symptoms	-.04	-0.72	.83	.00	0.52
16	Posts per Week X ADHD Symptoms	-.01	-0.25	.83	.00	0.06
17	Posts per Week X Perceived Support From Internet Group X ADHD Symptoms	.12	1.56	.83	.00	2.44

Note. Overall  $F$ -value for the model = 24.30,  $p < .001$ .

\*  $p < .01$  \*\*  $p < .001$

### Hypothesis 3

Multiple regression analyses and a hierarchical stepwise procedure were used to explore the relation between participation in an Internet support group and parental depressive symptoms as well as the potential moderating role of social support (enacted support for Hypothesis 3b and perceived support for Hypothesis 3c). As with Hypothesis 2, four participation variables were explored as IVs in separate analyses: (1) length of time in the group, (2) number of visits to the group per week during the past month, (3) number of hours spent visiting the group per week in the past month, and (4) number of messages posted per week in the past month.

The forward selection technique was used in all analyses. The first step included the length of time parents took to complete the survey. Parent level of education, parent income, parent age, parent gender, and child age (which were significantly correlated with several of the social support variables) were entered in the second block. The third block included the following covariates: (1) support from family (enacted support for Hypotheses 3a and 3c and perceived support for Hypothesis 3b), (2) support from friends outside of the support group (enacted support for Hypotheses 3a and 3c and perceived support for Hypothesis 3b), (3) a composite scale of previous treatment use (from Research Question 4), and (4) child ADHD symptoms. The fourth block included one of the variables assessing parent participation in the Internet support group. In moderator analyses, the fourth block also included a social support variable (perceived support for Hypothesis 3b and enacted support for Hypothesis 3c) from the Internet support group. The fifth block included three two-way interaction terms (participation in group X

Internet social support, child ADHD symptoms X Internet social support, participation in group X child ADHD symptoms) while the sixth block included the three-way interaction (participation in group X Internet social support X child ADHD symptoms). Results are presented for each parent participation variable.

Results for the covariates were identical in analyses for all parent participation variables; therefore, they will only be presented here and in the tables accompanying each analysis. There was a significant main effect for the length of time parents took to complete the survey,  $\beta = -.24$ ;  $t(197) = -3.47$ ,  $p < .01$ , indicating that parents who took less time to complete the survey reported greater depressive symptoms. Parent age and child age also yielded significant effects,  $\beta = -.19$ ;  $t(196) = -2.81$ ,  $p < .01$ , and  $\beta = .23$ ;  $t(195) = 2.94$ ,  $p < .01$ , respectively. These findings indicate that younger parents reported greater depressive symptoms, but parents of older children also reported greater depressive symptoms. Parent gender, parent level of education, and parent income did not yield significant effects.

### **Length of Time in Group**

Hypothesis 3a examined the relation between the length of time parents participated in an Internet support group and parental depressive symptoms, while controlling for several covariates. Findings for the demographic covariates are reported above. Child ADHD symptoms, which was examined as a covariate, also yielded a significant effect,  $\beta = .33$ ;  $t(191) = 5.00$ ,  $p < .001$ , indicating that greater child ADHD symptoms were associated with greater parental depressive symptoms. However, the following covariates were not significant: enacted support from family, enacted support

from friends, and previous treatment use. Finally, the main effect for length of participation in the Internet support group was not significant.

Hypothesis 3b explored the potential moderating effect of enacted support from the Internet support group, while controlling for the effect of perceived support from the Internet group (Table 27). Results for the demographic covariates are mentioned above. No other covariates (i.e., perceived support from the Internet group, enacted support from family, previous treatment use, enacted support from friends) yielded significant effects. As for the independent variables, a significant main effect was found for child ADHD symptoms,  $\beta = .42$ ;  $t(187) = 5.79$ ,  $p < .001$  and enacted support from the Internet support group,  $\beta = .24$ ;  $t(186) = 3.48$ ,  $p < .01$ , indicating that greater child ADHD symptoms and a higher frequency of seeking support from the Internet group were both associated with greater parental depressive symptoms. Length of participation did not yield a significant main effect. None of the two- or three-way interactions were significant.

Hypothesis 3c explored the potential moderating effect of perceived support from the Internet support group, while controlling for the effect of enacted support from the Internet group (Table 28). In addition to the demographic covariates (see above), enacted support from the Internet group yielded a significant effect,  $\beta = .26$ ;  $t(191) = 3.85$ ,  $p < .001$ , indicating that higher levels of support received from the Internet group was associated with greater depressive symptoms. The other covariates (perceived support from friends and family members, and previous treatment use) did not yield significant effects. When examining the independent variables, child ADHD symptoms yielded a significant main effect,  $\beta = .32$ ;  $t(187) = 4.65$ ,  $p < .001$ , indicating that greater child

Table 27. Moderating Effect of Enacted Support from the Internet Support Group on Length of Participation in an Internet Support Group Predicting Parental Depression

Step		$\beta$	$t$	$R^2$	$R^2\Delta$	$F\Delta$
1	Time to Complete Survey	-.24	-3.47*	.24	.06	12.07*
2	Parent Age	-.19	-2.81*	.31	.04	7.87*
3	Child Age	.23	2.94*	.36	.04	8.67*
4	Parent Gender	-.12	-1.77	.38	.01	3.14
5	Parent Education	.09	1.33	.39	.01	1.77
6	Parent Income	-.10	-1.45	.40	.01	2.10
7	Perceived Support from Internet Group	-.12	-1.56	.42	.01	2.44
8	Enacted Support from Family	-.07	-1.04	.42	.01	1.08
9	Previous Treatment Use	.07	0.86	.43	.00	0.73
10	Enacted Support from Friends	.02	0.17	.43	.00	0.03
11	Child ADHD Symptoms	.42	5.79**	.55	.12	33.49**
12	Enacted Support from Internet Group	.24	3.48*	.59	.04	12.11*
13	Length of Participation in Internet Group	.06	0.87	.59	.00	0.76
14	Length of Participation X Enacted Support from Internet Group	-.06	-1.06	.60	.00	1.11
15	ADHD Symptoms X Enacted Support from Internet Group	-.03	-0.41	.60	.00	0.17
16	Length of Participation X ADHD Symptoms	.00	0.04	.60	.00	0.00
17	Length of Participation X Enacted Support From Internet Group X ADHD Symptoms	-.02	-0.28	.60	.00	0.08

*Note.* Overall  $F$ -value for the model = 5.89,  $p < .001$ .

\*  $p < .01$  \*\*  $p < .001$

ADHD symptoms were associated with greater depressive symptoms. Perceived support from the Internet support group and length of participation in the group did not yield significant main effects. None of the two- or three-way interactions were significant.

Table 28. Moderating Effect of Perceived Support from the Internet Support Group on Length of Participation in an Internet Support Group Predicting Parental Depression

Step		$\beta$	$t$	$R^2$	$R^2\Delta$	$F\Delta$
1	Time to Complete Survey	-.24	-3.47*	.24	.06	12.07*
2	Parent Age	-.19	-2.81*	.31	.04	7.87*
3	Child Age	.23	2.94*	.36	.04	8.67*
4	Parent Gender	-.12	-1.77	.38	.01	3.14
5	Parent Education	.09	1.33	.39	.01	1.77
6	Parent Income	-.10	-1.45	.40	.01	2.10
7	Enacted Support from Internet Group	.26	3.85**	.47	.06	14.79**
8	Perceived Support from Friends	-.17	-2.34	.50	.02	5.46
9	Perceived Support from Family	-.05	-0.52	.50	.00	0.27
10	Previous Treatment Use	-.01	-0.08	.50	.00	0.01
11	Child ADHD Symptoms	.32	4.65**	.57	.08	21.61**
12	Perceived Support from Internet Group	-.17	-1.68	.58	.01	2.82
13	Length of Participation in Internet Group	.07	1.00	.58	.00	1.00
14	Length of Participation X Perceived Support from Internet Group	.13	1.87	.59	.01	3.50
15	ADHD Symptoms X Perceived Support from Internet Group	-.08	-1.06	.60	.00	1.13
16	Length of Participation X ADHD Symptoms	-.00	-0.04	.60	.00	0.00
17	Length of Participation X Perceived Support From Internet Group X ADHD Symptoms	.02	0.21	.60	.00	0.04

Note. Overall  $F$ -value for the model = 5.85,  $p < .001$ .

\*  $p < .01$  \*\*  $p < .001$

### Number of Visits to Group per Week

Hypothesis 3a examined the relation between the number of times parents reported visiting the Internet support group per week and parental depressive symptoms, while controlling for several possible covariates. Findings for all covariates were the

same as reported for length of participation in the Internet support group. The main effect for number of visits to the Internet support group per week was not significant.

Hypothesis 3b explored the potential moderating effect of enacted support from the Internet support group, while controlling for the effect of perceived support from the Internet group (Table 29). Findings for the covariates were the same as mentioned previously in analyses examining length of participation in the Internet support group. As for the independent variables, a significant main effect was found for child ADHD symptoms,  $\beta = .42$ ;  $t(187) = 5.79$ ,  $p < .001$  and enacted support from the Internet support group,  $\beta = .24$ ;  $t(186) = 3.48$ ,  $p < .01$ . In other words, greater child ADHD symptoms and a higher frequency of seeking support from the Internet group were both associated with greater parental depressive symptoms. Number of visits to the group per week did not yield a significant main effect. In addition, no two- or three-way interactions emerged.

Hypothesis 3c explored the potential moderating effect of perceived support from the Internet support group, while controlling for the effect of enacted support from the Internet group. Findings for the covariates were the same as those mentioned for Hypothesis 3c when length of participation in the group was explored. When examining the independent variables, child ADHD symptoms yielded a significant main effect,  $\beta = .32$ ;  $t(187) = 4.65$ ,  $p < .001$ , indicating that greater child ADHD symptoms were associated with greater parental depressive symptoms. Perceived support from the Internet support group and number of visits per week did not yield significant main effects. In addition, none of the two- or three-way interactions were significant. Table 30 displays complete results.



Table 29. Moderating Effect of Enacted Support from the Internet Support Group on Visits per Week Predicting Parental Depression

Step		$\beta$	$t$	$R^2$	$R^2\Delta$	$F\Delta$
1	Time to Complete Survey	-.24	-3.47*	.24	.06	12.07*
2	Parent Age	-.19	-2.81*	.31	.04	7.87*
3	Child Age	.23	2.94*	.36	.04	8.67*
4	Parent Gender	-.12	-1.77	.38	.01	3.14
5	Parent Education	.09	1.33	.39	.01	1.77
6	Parent Income	-.10	-1.45	.40	.01	2.10
7	Perceived Support from Internet Group	-.12	-1.56	.42	.01	2.44
8	Enacted Support from Family	-.07	-1.04	.42	.01	1.08
9	Previous Treatment Use	.07	0.86	.43	.00	0.73
10	Enacted Support from Friends	.02	0.17	.43	.00	0.03
11	Child ADHD Symptoms	.42	5.79**	.55	.12	33.49**
12	Enacted Support from Internet Group	.24	3.48*	.59	.04	12.11*
13	Visits per Week	-.00	-0.04	.59	.00	0.00
14	Visits Per Week X Enacted Support from Internet Group	-.11	-1.74	.60	.01	3.03
15	Visits per Week X ADHD Symptoms	-.04	-0.51	.60	.00	0.26
16	ADHD Symptoms X Enacted Support from Internet Group	-.01	-0.12	.60	.00	0.02
17	Visits per Week X Enacted Support From Internet Group X ADHD Symptoms	.14	1.78	.61	.01	3.16

Note. Overall  $F$ -value for the model = 6.28,  $p < .001$ .

\*  $p < .01$  \*\*  $p < .001$

### Number of Hours Visiting Group per Week

Hypothesis 3a examined the relation between the number of hours parents reported reading and writing posts in the Internet support group per week and parental depressive symptoms, while controlling for several possible covariates. Findings for the covariates were the same as reported previously. The main effect for hours spent reading and writing posts to the Internet support group per week was not significant.

Table 30. Moderating Effect of Perceived Support from the Internet Support Group on Visits per Week Predicting Parental Depression

Step		$\beta$	$t$	$R^2$	$R^2\Delta$	$F\Delta$
1	Time to Complete Survey	-.24	-3.47*	.24	.06	12.07*
2	Parent Age	-.19	-2.81*	.31	.04	7.87*
3	Child Age	.23	2.94*	.36	.04	8.67*
4	Parent Gender	-.12	-1.77	.38	.01	3.14
5	Parent Education	.09	1.33	.39	.01	1.77
6	Parent Income	-.10	-1.45	.40	.01	2.10
7	Enacted Support from Internet Group	.26	3.85**	.47	.06	14.79**
8	Perceived Support from Friends	-.17	-2.34	.50	.02	5.46
9	Perceived Support from Family	-.05	-0.52	.50	.00	0.27
10	Previous Treatment Use	-.01	-0.08	.50	.00	0.01
11	Child ADHD Symptoms	.32	4.65**	.54	.10	26.69**
12	Perceived Support from Internet Group	-.17	-1.68	.56	.02	4.39
13	Visits per Week	.03	0.42	.56	.00	0.00
14	ADHD Symptoms X Perceived Support from Internet Group	-.07	-0.95	.56	.01	1.49
15	Visits per Week X ADHD Symptoms	-.06	-0.87	.56	.00	0.92
16	Visits per Week X Perceived Support from Internet Group	-.01	-0.14	.57	.00	0.47
17	Visits per Week X Perceived Support From Internet Group X ADHD Symptoms	-.23	-1.63	.57	.01	1.63

Note. Overall  $F$ -value for the model = 5.75,  $p < .001$ .

\*  $p < .01$  \*\*  $p < .001$

Hypothesis 3b explored the potential moderating effect of enacted support from the Internet support group, while controlling for the effect of perceived support from the Internet group. Once again, findings for the covariates were the same as those reported earlier. As for the independent variables, a significant main effect was found for child ADHD symptoms,  $\beta = .42$ ;  $t(187) = 5.79$ ,  $p < .001$  and enacted support from the Internet support group,  $\beta = .24$ ;  $t(186) = 3.48$ ,  $p < .01$ , meaning that greater child ADHD

symptoms and a higher frequency of seeking support from the Internet group were both associated with greater parental depressive symptoms. Number of hours per week spent reading and writing posts did not yield a significant main effect and none of the two- or three-way interactions were significant. Table 31 displays complete results.

Table 31. Moderating Effect of Enacted Support from the Internet Support Group on Hours Spent in Internet Support Group per Week Predicting Parental Depression

Step		$\beta$	$t$	$R^2$	$R^2\Delta$	$F\Delta$
1	Time to Complete Survey	-.24	-3.47*	.24	.06	12.07*
2	Parent Age	-.19	-2.81*	.31	.04	7.87*
3	Child Age	.23	2.94*	.36	.04	8.67*
4	Parent Gender	-.12	-1.77	.38	.01	3.14
5	Parent Education	.09	1.33	.39	.01	1.77
6	Parent Income	-.10	-1.45	.40	.01	2.10
7	Perceived Support from Internet Group	-.12	-1.56	.42	.01	2.44
8	Enacted Support from Family	-.07	-1.04	.42	.01	1.08
9	Previous Treatment Use	.07	0.86	.43	.00	0.73
10	Enacted Support from Friends	.02	0.17	.43	.00	0.03
11	Child ADHD Symptoms	.42	5.79**	.55	.12	33.49**
12	Enacted Support from Internet Group	.24	3.48*	.59	.04	12.11*
13	Hours per Week	-.09	-1.11	.59	.00	1.23
14	Hours Per Week X Enacted Support from Internet Group	-.11	-1.65	.60	.01	2.72
15	Hours per Week X ADHD Symptoms	.02	0.27	.60	.00	0.08
16	ADHD Symptoms X Enacted Support from Internet Group	-.03	-0.34	.60	.00	0.12
17	Hours per Week X Enacted Support From Internet Group X ADHD Symptoms	.00	0.04	.60	.00	0.00

Note. Overall  $F$ -value for the model = 6.07,  $p < .001$ .

\*  $p < .01$  \*\*  $p < .001$

Hypothesis 3c explored the potential moderating effect of perceived support from the Internet support group, while controlling for the effect of enacted support from the Internet group (Table 32). Findings for the covariates were the same as those mentioned previously. When examining the independent variables, child ADHD symptoms yielded a significant main effect,  $\beta = .32$ ;  $t(187) = 4.65$ ,  $p < .001$ , indicating that greater child

Table 32. Moderating Effect of Perceived Support from the Internet Support Group on Hours Spent in Internet Support Group per Week Predicting Parental Depression

Step		$\beta$	$t$	$R^2$	$R^2\Delta$	$F\Delta$
1	Time to Complete Survey	-.24	-3.47*	.24	.06	12.07*
2	Parent Age	-.19	-2.81*	.31	.04	7.87*
3	Child Age	.23	2.94*	.36	.04	8.67*
4	Parent Gender	-.12	-1.77	.38	.01	3.14
5	Parent Education	.09	1.33	.39	.01	1.77
6	Parent Income	-.10	-1.45	.40	.01	2.10
7	Enacted Support from Internet Group	.26	3.85**	.47	.06	14.79**
8	Perceived Support from Friends	-.17	-2.34	.50	.02	5.46
9	Perceived Support from Family	-.05	-0.52	.50	.00	0.27
10	Previous Treatment Use	-.01	-0.08	.50	.00	0.01
11	Child ADHD Symptoms	.32	4.65**	.57	.08	21.61**
12	Perceived Support from Internet Group	-.17	-1.68	.58	.01	2.82
13	Hours per Week	-.09	-1.03	.58	.00	1.07
14	Hours per Week X Perceived Support from Internet Group	.10	1.45	.59	.01	2.10
15	ADHD Symptoms X Perceived Support from Internet Group	-.11	-1.35	.59	.01	1.82
16	Hours per Week X ADHD Symptoms	-.03	-0.34	.59	.00	0.12
17	Hours per Week X Perceived Support From Internet Group X ADHD Symptoms	.03	0.34	.59	.00	0.12

Note. Overall  $F$ -value for the model = 5.81,  $p < .001$ .

\*  $p < .01$  \*\*  $p < .001$

ADHD symptoms were associated with greater parental depressive symptoms. Perceived support from the Internet support group and number of hours reading and writing posts per week did not yield significant main effects. In addition, none of the two- or three-way interactions were significant.

### **Number of Messages Posted per Week**

Hypothesis 3a examined the relation between the number of times parents posted messages to the Internet support group per week and parental depressive symptoms, while controlling for several possible covariates. Results for the covariates were the same as mentioned for length of participation in the Internet support group. The main effect for number of posts per week was not significant.

Hypothesis 3b explored the potential moderating effect of enacted support from the Internet support group, while controlling for the effect of perceived support from the Internet group (Table 33). Findings for the covariates were the same as those reported earlier. When examining the independent variables, a significant main effect was found for child ADHD symptoms,  $\beta = .42$ ;  $t(187) = 5.79$ ,  $p < .001$  and enacted support from the Internet support group,  $\beta = .24$ ;  $t(186) = 3.48$ ,  $p < .01$ ; greater child ADHD symptoms and a higher frequency of seeking support from the Internet group were both associated with greater parental depressive symptoms. Number of posts per week did not yield a significant main effect. None of the two- or three-way interactions were significant.

Hypothesis 3c explored the potential moderating effect of perceived support from the Internet support group, while controlling for the effect of enacted support from the Internet group. Findings for the covariates were the same as those reported earlier. When

examining the independent variables, child ADHD symptoms yielded a significant main effect,  $\beta = .32$ ;  $t(187) = 4.65$ ,  $p < .001$ ; greater child ADHD symptoms were associated with greater parental depressive symptoms. Perceived support from the Internet support group and number of posts per week did not yield significant main effects and no two- or three-way interactions emerged. Table 34 displays complete results.

Table 33. Moderating Effect of Enacted Support from the Internet Support Group on Posts per Week Predicting Parental Depression

Step		$\beta$	$t$	$R^2$	$R^2\Delta$	$F\Delta$
1	Time to Complete Survey	-.24	-3.47*	.24	.06	12.07*
2	Parent Age	-.19	-2.81*	.31	.04	7.87*
3	Child Age	.23	2.94*	.36	.04	8.67*
4	Parent Gender	-.12	-1.77	.38	.01	3.14
5	Parent Education	.09	1.33	.39	.01	1.77
6	Parent Income	-.10	-1.45	.40	.01	2.10
7	Perceived Support from Internet Group	-.12	-1.56	.42	.01	2.44
8	Enacted Support from Family	-.07	-1.04	.42	.01	1.08
9	Previous Treatment Use	.07	0.86	.43	.00	0.73
10	Enacted Support from Friends	.02	0.17	.43	.00	0.03
11	Child ADHD Symptoms	.42	5.79**	.55	.12	33.49**
12	Enacted Support from Internet Group	.24	3.48*	.59	.04	12.11*
13	Posts per Week	-.02	-0.23	.59	.00	0.05
14	Posts Per Week X Enacted Support from Internet Group	-.16	-2.49	.61	.02	6.22
15	Posts Per Week X ADHD Symptoms	.16	2.37	.62	.02	5.63
16	ADHD Symptoms X Enacted Support from Internet Group	-.05	-0.61	.63	.00	0.37
17	Posts per Week X Enacted Support From Internet Group X ADHD Symptoms	.12	1.52	.63	.01	2.32

Note. Overall  $F$ -value for the model = 7.03,  $p < .001$ .

\*  $p < .01$  \*\*  $p < .001$

Table 34. Moderating Effect of Perceived Support from the Internet Support Group on Posts per Week Predicting Parental Depression

Step		$\beta$	$t$	$R^2$	$R^2\Delta$	$F\Delta$
1	Time to Complete Survey	-.24	-3.47*	.24	.06	12.07*
2	Parent Age	-.19	-2.81*	.31	.04	7.87*
3	Child Age	.23	2.94*	.36	.04	8.67*
4	Parent Gender	-.12	-1.77	.38	.01	3.14
5	Parent Education	.09	1.33	.39	.01	1.77
6	Parent Income	-.10	-1.45	.40	.01	2.10
7	Enacted Support from Internet Group	.26	3.85**	.47	.06	14.79**
8	Perceived Support from Friends	-.17	-2.34	.50	.02	5.46
9	Perceived Support from Family	-.05	-0.52	.50	.00	0.27
10	Previous Treatment Use	-.01	-0.08	.50	.00	0.01
11	Child ADHD Symptoms	.32	4.65**	.57	.08	21.61**
12	Perceived Support from Internet Group	-.17	-1.68	.58	.01	2.82
13	Posts per Week	.01	0.09	.58	.00	0.01
14	Posts per Week X ADHD Symptoms	.11	1.77	.59	.01	3.12
15	Posts per Week X Perceived Support from Internet Group	.71	0.48	.59	.00	0.50
16	ADHD Symptoms X Perceived Support from Internet Group	-.05	-0.59	.59	.00	0.35
17	Posts per Week X Perceived Support From Internet Group X ADHD Symptoms	-.16	-1.45	.60	.01	2.09

Note. Overall  $F$ -value for the model = 5.89,  $p < .001$ .

\*  $p < .01$  \*\*  $p < .001$

### Summary

Findings did not support the hypothesis that greater participation in the group would be associated with lower levels of parental depressive symptoms (Hypothesis 3a); the relation between participation in an Internet support group and parental depressive symptoms was not statistically significant. Although the main effect for perceived support was not significant, a significant main effect for enacted support was detected.

Results indicated that greater enacted support was associated with greater depressive symptoms, which was contrary to what was hypothesized. In addition, the hypothesis that enacted support and perceived support from the Internet group would moderate the relation between participation in the group and parental depressive symptoms (Hypothesis 3b and 3c, respectively) was not supported.



## CHAPTER FIVE

### DISCUSSION

This dissertation examined characteristics of individuals who participate in Internet support groups for parents of children with ADHD and the impact that participation in these groups has on parent functioning. This section highlights the key findings that addressed the research questions and hypotheses. In addition, Table 35 displays findings related to the hypotheses explored in this study. Finally, limitations of this study and future directions for research in this area of inquiry are described.

#### **Research Question 1**

Parents were asked several questions to obtain information about their demographic backgrounds. Although complete information was reported in the Results section, three interesting patterns that emerged are highlighted further in the section that follows: (1) education, income, and marital status of participants, (2) number of fathers who participated in the study, and (3) parental psychopathology.

#### **Education, Income, and Marital Status of Participants**

Overall, the parents that completed measures for this study were well educated, middle class, and married. In terms of level of education, 49% of parents reported they were college graduates and 26% reported they had obtained some type of graduate degree. In addition, 88% of parents reported an annual household income over \$60,000. Finally, 92% of the sample reported they were married.

Previous research examining participants in Internet support groups has largely failed to examine the demographic characteristics of group members. However, the results of this study are similar to those from a study examining married mothers of children with autism who participated in Internet support groups. In that study, 73% of the sample reported an annual household income over \$50,000 and 71% reported they had a college or graduate degree (Garbe, 2008). Similarly, a study of parents who belonged to the National Alliance for the Mentally Ill (NAMI), a national peer-led support network, found that the average NAMI member was college-educated and middle class (Cook et al., 1999).

There are several possible reasons why the sample in this study primarily consisted of well educated, middle class, married parents. First, it is possible that parents with less education and lower incomes may have less access to computers, and therefore to Internet support groups. Research examining the “digital divide” has documented differences in computer ownership and Internet usage among different income groups in the United States and has called for government assistance to make the Internet more accessible to low income individuals (Chakraborty & Bosman, 2005; Compaine, 2001; Robinson, 2003). In addition, single and low-income parents may face other barriers that limit their opportunity to access and participate in an online support group, such as working long hours and having limited time to spend searching for and participating in online groups (Floyd & Gallagher, 1997). Finally, it is possible that the sample in this study is not representative of the range of parents who participate in Internet support groups, but instead parents who were married, middle class, and well educated were

simply more likely to agree to participate in the research study. For example, perhaps parents from these demographic groups had a greater appreciation of research due to their educational exposure or more time to complete measures due to being in a two-parent family.

Future research should continue to examine the demographic characteristics of parents who either participate or do not participate in Internet support groups to explore potential differences in participation rates of various demographic groups. Specific hypotheses should be tested, such as the hypothesis that exposure and access to technology, more discretionary time, and greater appreciation for research moderates or mediates the relationship between parent demographics and use of Internet support groups. In addition, if real differences in participation rates do exist, effort should be made to develop strategies or interventions that would make Internet support groups more accessible to parents who are interested in participating, but have not participated due to any of the reasons uncovered in the research.

### **Participation Rates of Fathers**

In this study, 57% of the participants were fathers. The large number of fathers who participated in this study was unexpected given the fact that fathers are often not represented in the child psychopathology research literature due to difficulties with recruitment, resistance to participating in research, and lack of participation in initial and follow-up appointments related to diagnosis and treatment (Baker, 1994; Phares, 1992; Singh, 2003). Thus, this sample is unique in that it allowed for comparisons to be made between mothers and fathers on several variables of interest.

In general, fathers and mothers exhibited similar patterns of participation in Internet support groups. Fathers and mothers reported they participated in the Internet support group for a similar length of time, posted a similar number of messages per week, and spent a similar number of hours participating in the group per week. The only significant difference that emerged was that fathers reported significantly fewer visits to the Internet support group per week. In other words, although fathers and mothers spent a similar amount of time reading and posting messages per week, fathers reported a lower frequency of visits to the group per week than mothers.

Findings from this study suggest that Internet support groups appeal to both fathers and mothers. This is somewhat surprising because although previous research comparing Internet usage between men and women has found that men spend more time on the Internet in general (Gordon, Juang, & Syed, 2007; Kennedy, Wellman, & Klement, 2003; Pew Internet & American Life Project, 2005), women report higher rates of using the Internet to access support for health or personal problems (Buchanan & Coulson, 2007; Pew Internet & American Life Project, 2005) and previous research has found that women are more likely to join an Internet support group (Perron, 2002; Singh, 2003). Specific details about the number of men versus women who were members of the support groups for parents of children with ADHD included in the current study were not available; therefore it is unknown if men participate in Internet support groups for parents of children with ADHD at higher rates than women, or if they were only more likely to participate in the current research study. However, there are several possible reasons why Internet support groups may appeal more to fathers than to mothers.

As mentioned earlier, men typically report being more comfortable with technology than women (Gordon et al., 2007; Kennedy et al., 2003; Pew Internet & American Life Project, 2005). Thus, it is possible that higher levels of comfort with using the Internet contribute to fathers being more likely to seek out information and advice online when they have a child with difficult behavior such as ADHD. In addition, some research has found that family obligations (e.g., housework, childcare) interfere more with mothers' use of the Internet than with fathers' use of the Internet (Kennedy et al., 2003; Robinson, 2003). Therefore, fathers may have a greater amount of discretionary time to spend online, which may contribute to them being more likely to participate in an Internet support group. In addition, it is possible that a division of labor may exist, such that mothers attend the child's appointments with a doctor or mental health professional while fathers use the Internet to obtain information. Finally, gender differences in patterns of support seeking may contribute to men being more likely to seek support online. For example, women are more likely to seek professional services to cope with emotional distress than men (Clarkin & Levy, 2004) and fathers are less likely than mothers to participate in professional treatment for their child's ADHD (Singh, 2003). As such, men may seek out online support instead of professional services when they experience difficulties with their child's ADHD. In addition, Singh (2003) found that fathers are more reluctant than mothers to discuss their child's diagnoses and treatment with friends or family. Therefore, the social distance afforded on the Internet may be particularly valuable to fathers who feel less comfortable discussing their child's difficult behavior in face-to-face circumstances. Furthermore, one study of gender differences in

Internet usage found that men were more likely to use the Internet to form new relationships whereas women were more likely to use the Internet to maintain existing relationships with family and friends (Kennedy et al., 2003). Thus, Internet support groups may be viewed by fathers as an appealing way to interact with others, discuss their child's ADHD, and obtain social support. Additional research is needed to better understand the frequency with which fathers participate in Internet support groups. Likewise, potential differences in how mothers and fathers use the Internet to access information and social support should be explored.

Although fathers and mothers reported few differences in their level of participation in an Internet support group, several significant differences between their scores on the independent and dependent variables emerged. First, fathers reported fewer ADHD symptoms for their child. This finding is consistent with previous research suggesting that fathers typically perceive their child's ADHD symptoms as less severe than mothers (Cunningham et al., 1988; Mash & Johnston, 1983; Podolski & Nigg, 2001). Fathers also reported a lower degree of parenting stress than mothers, which is consistent with previous research comparing mothers and fathers of children with ADHD (Baker, 1994; Johnston, 1996). However, one surprising finding was that fathers in this sample reported experiencing a greater number of stressful parenting events than mothers. In other words, although fathers reported they experienced more stressful parenting events, they also reported perceiving these events as being less stressful than mothers. Although the majority of previous research examining parenting stress and child ADHD has focused on mothers (Bussing et al., 2003; Gerdes et al., 2007; Harrison &

Sofronoff, 2002; Mash & Johnston, 1983; Vitanza & Guarnaccia, 1999), findings from the current study suggest that fathers experience stressful parenting events at a similar or possibly greater frequency than mothers, but they perceive these events to be less stressful (i.e., experience a lower degree of stress) than mothers.

This study was unique in that it examined two different aspects of parenting stress (i.e., number of stressful events experienced, degree of stress associated with the events experienced). In addition, a measure of parenting stress developed specifically for parents of children with ADHD (the DBSI; Johnson & Reader, 2002) was used in this study. Therefore, the inconsistent findings related to parenting stress may be attributed to the way in which this variable was measured. These findings highlight the importance of carefully operationalizing and measuring parenting stress in research examining this construct in families of children with ADHD. Future research is needed to determine if similar differences are found between mothers and fathers in samples not participating in an Internet support group.

### **Parental Psychopathology**

Over half (52%) of the parents in this study reported they had been diagnosed with at least one mental health disorder. Although this is consistent with previous research that has found that parents of children with ADHD exhibit higher rates of mental health problems than parents of children who do not have ADHD (Brassett-Harknett & Butler, 2007; Johnston, 1996; Pelham et al., 2005), some differences in rates of specific diagnoses were found. Higher rates of anxiety disorders were reported in this sample than in previous samples. Thirty-five percent of parents in this sample reported having been

diagnosed with an anxiety disorder, whereas a previous study of mothers of children with ADHD found the lifetime rate of anxiety disorders was between 23% and 27% (Chronis et al., 2003). In addition, 35% of parents in the current study reported they had been diagnosed with ADHD. This is at the upper limit of the range of 10% to 35% found in previous research examining the rates of ADHD in immediate family members of children with ADHD (Barkley, 2003). The overall rates of depression and Bipolar disorder among parents in this study were 21% and 28%, respectively, which is lower than the lifetime rate of mood disorders that ranged from 36% to 43% in a previous study of mothers of children with ADHD (Chronis et al., 2003). However, rates of depression were similar to those found in a previous study that compared mothers and fathers of children with ADHD. That study found that the lifetime rate of depression in mothers was between 25% and 39% and in fathers was between 11% and 15% (Nigg & Hinshaw, 1998), while the rate in the current study was 34% for mothers and 10% for fathers. Finally, only 2% of parents in the current study reported being diagnosed with a substance use disorder, which is substantially lower than the rate of 14% to 32% found for mothers of children with ADHD in a previous study (Chronis et al., 2003).

Differences in rates of parental mental health problems observed in this study may have emerged as a function of the way in which the sample was obtained. Previous studies have recruited parents of children with ADHD from outpatient clinics (Chronis et al., 2003; Nigg & Hinshaw, 1998), whereas this study recruited parents seeking social support online. Therefore, it is possible that parents with certain mental health problems may be more likely to seek support online. For example, previous research has found that



individuals with social anxiety are more comfortable using the Internet, as opposed to face-to-face methods, to seek social support (Gordon et al., 2007; McKenna, 2008). As such, higher rates of anxiety disorders found in this study may be due to the fact that parents with anxiety disorders are more comfortable with seeking support on the Internet instead of in person. In addition, this study asked parents to self-report their diagnoses, whereas previous research has typically used diagnostic interviews to confirm parental diagnoses (Chronis et al., 2003; Nigg & Hinshaw, 1998). Therefore, social desirability may have contributed to parents feeling more comfortable reporting certain diagnoses (e.g., ADHD, anxiety) and less comfortable reporting other diagnoses (e.g., substance use disorder). Due to the fact that this is the first known study to collect data on rates of parental psychopathology for parents who participate in Internet support groups, the degree to which these rates represent Internet support group participants as a whole is unknown. Additional research is needed to replicate and better understand this finding.

### **Research Question 2**

Parents were asked to retrospectively report on their reasons for initially joining an Internet support group. The top three reasons reported by parents were: (1) to obtain information about ADHD (81%), (2) to obtain information about treatments for ADHD (75%), and (3) to connect with other parents (75%). When parents were asked to select their primary reason for initially joining the Internet support group, 36% of parents reported their top reason for joining was to obtain information about treatments for ADHD, 32% reported it was to obtain information about ADHD in general, and 21% reported their top reason for joining was to connect with other parents. These findings

indicate that the majority of parents initially joined the support group to obtain informational support about their child's diagnosis. This is consistent with previous research suggesting that individuals often join Internet support groups to better understand the health condition that is the focus of the group (Buchanan & Coulson, 2007; Mendelson, 2003). Additionally, previous research has found that individuals also seek Internet support groups so they can connect with others experiencing similar difficulties (Coulson, 2005; Lamberg, 2003). Similar results were found in this sample, with many parents reporting they joined the group to connect with other parents.

Parents were also asked to indicate why they decided to join an Internet support group instead of a face-to-face support group. Issues related to the convenience of Internet support groups were the top two reasons reported by parents, with 34% of the sample reporting they joined because of the overall convenience associated with the group taking place online (i.e., could access the group whenever it was convenient) and 28% reporting they joined an online group because no face-to-face groups met at a time or place that was convenient for their schedule. This means that for many parents, Internet support groups are more attractive than face-to-face groups because parents are able to access them at their own leisure. However, it is also important to note that many parents reported difficulties locating a face-to-face group, with 16% of parents reporting they were unsure how to find a face-to-face support group and 10% reporting no face-to-face groups were available in their town or city. Thus, Internet support groups also appeal to parents who live in areas where face-to-face support groups are not easily accessible.

Taken together, findings suggest that parents often join Internet support groups to obtain informational support associated with their child's diagnosis. However, the opportunity to obtain emotional support and connect with others is also regarded highly by parents. Additionally, Internet support groups appeal to parents who may be unable to join a face-to-face group due to geographic or scheduling barriers.

### **Research Question 3**

Previous research has cautioned that bullying, lying, and other adverse experiences may take place in Internet support groups due to the anonymity afforded online (Darcy & Dooley, 2007; Eysenbach et al., 2004; Garbe, 2008). This study examined both positive and negative experiences that take place in Internet support groups for parents of children with ADHD. Although parents reported high frequencies of positive events (e.g., 99% received helpful advice or information on at least one occasion, 97% provided advice to others on at least one occasion), several parents also reported experiencing negative events. For example, 57% of parents reported group members were bossy or overly opinioned at least once, 53% reported group members had argued, 51% reported they had a miscommunication with other group members, 46% had been lied to, and 39% had been bullied by a group member. In addition, 52% reported experiencing a technical problem when attempting to access the Internet support group on at least one occasion. Thus, although negative events are experienced at a lower frequency than positive events, a high percentage of parents report experiencing some negative events while participating in an Internet support group.

When moderated and un-moderated groups were compared, significant differences in both positive and negative experiences were found. Parents who participated in un-moderated groups not only reported that they experienced significantly more positive events than parents in moderated groups, but they also experienced significantly greater negative events. Moderated groups are led by a facilitator who makes judgments about who is permitted to join the group and what messages can be posted to the group, whereas un-moderated groups are open to the public and do not carry such restrictions (Garbe, 2008; Madara, 1997; Tanis, 2007). Therefore, it is possible that groups with fewer restrictions provide parents more freedom, which establishes an environment conducive to enhanced positive experiences. However, this lack of oversight may also create the possibility of more negative events taking place. Previous research has given very limited attention to differences between moderated and non-moderated Internet support groups. However, parents, Internet support group moderators, and clinicians should be aware of these findings. Specifically, parents should be aware of the possible risks and rewards associated with joining certain Internet support groups. Additionally, professionals should carefully evaluate groups and consider how specific groups may fit the needs of the parents they work with before making recommendations. Finally, Internet support group moderators should not only be aware of the risks they may need to manage in the group (e.g., arguments between group members, bullying, or problems with technology), but also need to consider how their behavior may impact the experiences of group members.

#### Research Question 4

Parents were asked several questions to better understand the rate with which they accessed traditional mental health services in addition to the Internet support group. In general, parents reported a high frequency of seeking mental health services. First, 99% of parents reported their child had been diagnosed with ADHD by a professional (e.g., pediatrician, family doctor, psychologist). Therefore, it can be assumed that almost all parents had at least some contact with a professional regarding their child's diagnosis. In addition, the majority of parents reported receiving some type of therapy and/or medication to address their child's ADHD; three parents (1%) reported their child had received medication only, 50 (23%) reported their child had received therapy only, and 159 (75%) reported their child had received therapy and medication. Only one person reported their child had not received any therapy or medication to address his or her ADHD. Thus, although some previous research has found that many members of Internet support groups have not yet received professional services to address their concerns (Bruwer & Stein, 2005; Darcy & Dooley, 2007; Kral, 2006), almost all participants in the current study had engaged in some type of professional treatment for their child's ADHD. Unfortunately, most parents did not complete open-ended questions asking them to report on the number of therapy sessions their child had attended or the number of months their child had been taking medication. Therefore, analyses examining dosage of previous treatment could not be completed. However, the findings suggest that Internet support groups are typically used in conjunction with more traditional forms of treatment for ADHD.

Two treatment typologies were also compared in analyses: therapy only and therapy plus medication. Results revealed that the therapy only group reported fewer ADHD symptoms for their child, less enacted support from friends and the Internet support group, and a lower degree of parenting stress than parents in the therapy plus medication group. In general, the direction of these findings is consistent with what would be expected. First, parents of children exhibiting less severe symptoms most likely experience a lower degree of parenting stress due to the fact that their child is acting out less severely (Barkley, 2003; Fischer, 1990; Whalen et al., 2006). Second, due to the fact that these parents report fewer ADHD symptoms for their child and a lower degree of parenting stress, it is not surprising that they also report seeking support from others less often than parents who experience more parenting stress. Finally, it is possible that parents of children exhibiting fewer ADHD symptoms only use therapy to manage their child's behavior, whereas parents of children with more severe symptoms also seek psychopharmacological interventions to address their child's behavior problems.

Finally, an exploratory factor analysis was conducted on the Previous Treatment Questionnaire to explore the factor structure of the measure. Only one factor (with the following items: behavior chart, yelling, removal of privileges, time out, individual therapy for the child, and medication) emerged. With the exception of yelling, the items that made up this factor are associated with more traditional forms of intervention for ADHD whereas the items not on this factor (e.g., spanking, dietary restrictions, social skills group for the child) consist of more controversial or less supported interventions. The Previous Treatment Questionnaire was developed for this study and thus has not yet

been widely used in research. However, the results from this study do not justify the use of the complete measure. Additional research is needed to determine how the utility of the Previous Treatment Questionnaire could be improved for future research examining treatment techniques used by parents of children with ADHD.

### **Comparing Sample to Previous Samples**

The mean score on measures of parental depression (CES-D) and parenting stress (DBSI Experience and Degree scales) was compared to the mean score obtained with similar samples in previous research to explore the extent to which this sample was similar to or different from previous samples. Results indicated that the sample in this study reported significantly higher scores on the CES-D, DBSI Stress Experience scale, and DBSI Stress Degree scale than parents in previous studies.

Elevated mean scores on measures of parental depressive symptoms and parenting stress observed when this study was compared to previous studies may be related to differences in recruitment methods. The sample in the current study was composed of parents actively seeking social support for themselves whereas the samples that were used as comparison groups in analyses for the CES-D (van der Oord et al., 2006) and DBSI (Reader et al., 2009) were comprised of parents seeking treatment for their child at an outpatient clinic. Thus, it is possible that parents who seek support online experience significantly greater distress than parents who do not. Although this phenomenon has not been explored to a great extent in previous research, there is some evidence to support this hypothesis. For example, one study of parents of adult offspring with mental illness who participated in support groups found that group members reported more caregiving

strains and greater unmet needs than non-participants (Cook et al., 1999). Furthermore, one study examining Internet use among college students found that individuals who more frequently used the Internet as their primary outlet for managing stress (as opposed to face-to-face resources) exhibited poorer mental health than individuals who used the Internet as a coping tool less frequently (Gordon et al., 2007). Therefore, it is possible that this sample reflects the typical profile of parents in online support groups and that parents in these groups experience greater distress than parents who do not participate in support groups. However, it is also possible that the group of parents that chose to respond to the survey were a unique subset of parents who do not represent the typical parent in an Internet support group. Due to the fact that this is the first known study to explore parenting stress and parental depressive symptoms reported by parents of children with ADHD who participate in online support groups, direct comparisons of this sample to previous samples cannot be made. Thus, the representativeness of this sample is unknown. Additional research is needed to better understand the characteristics of parents who participate in Internet support groups as well as potential differences between parents who do and do not participate in online groups.

### **Hypothesis 1**

The first hypothesis examined the relation between child ADHD symptoms and two types of parenting stress (stress experienced, stress degree) as well as parental depressive symptoms. Thus, three outcomes were examined. In addition, the potential moderating role of child ODD and CD symptoms was explored.



Table 35. Support for Hypotheses

<u>Hypothesis 1a</u> : Child ADHD symptoms will be positively related to parenting stress.	<i>Partially Supported (for Degree of Stress)</i>
<u>Hypothesis 1b</u> : Child ADHD symptoms will be positively related to parental depressive symptoms.	<i>Supported</i>
<u>Hypothesis 1c</u> : The presence of co-occurring symptoms of ODD/CD will moderate the relation between child ADHD symptoms and parenting stress.	<i>Not Supported</i>
<u>Hypothesis 1d</u> : The presence of co-occurring symptoms of ODD/CD will moderate the relation between child ADHD symptoms and parental depressive symptoms.	<i>Not Supported</i>
<u>Hypothesis 2a</u> : Parents' level of participation in the Internet support group will be negatively related to the degree of parenting stress reported.	<i>Not Supported</i>
<u>Hypothesis 2b</u> : Enacted social support received from the Internet support group will moderate the relation between level of participation and degree of parenting stress.	<i>Partially Supported</i>
<u>Hypothesis 2c</u> : Perceived social support received from the Internet support group will moderate the relation between level of participation and degree of parenting stress.	<i>Not Supported</i>
<u>Hypothesis 3a</u> : Parents' level of participation in the Internet support group will be negatively related to parental depressive symptoms.	<i>Not Supported</i>
<u>Hypothesis 3b</u> : Enacted social support received from the Internet support group will moderate the relation between level of participation and parental depressive symptoms.	<i>Not Supported</i>
<u>Hypothesis 3c</u> : Perceived social support received from the Internet support group will moderate the relation between level of participation and parental depressive symptoms.	<i>Not Supported</i>

Parenting stress experienced (i.e., the number of stressful events reported by the parent) was not significantly related to child ADHD symptoms, but it was positively related to child ODD/CD symptoms. On the other hand, degree of parenting stress

(i.e., how stressful parents perceived the events they experienced) was positively related to child ADHD symptoms but not related to child ODD/CD symptoms. In other words, child ODD/CD symptoms were significantly related to the number of stressful parenting events experienced while child ADHD symptoms were significantly related to the extent to which parents found these events to be stressful. These findings were somewhat surprising given the fact that previous research has overwhelmingly concluded that greater child ADHD symptoms are related to increased parenting stress (Baker, 1994; Barkley, 2003; Fischer, 1990; Harrison & Sofronoff, 2002; Johnston, 1996; Mash & Johnston, 1983). Additionally, there is a large body of research suggesting that child ODD and CD symptoms contribute to additional parenting stress (i.e., are "additive" factors; Bussing et al., 2003; Johnston, 1996; Podolski & Nigg, 2001).

There are a few possible explanations for this unexpected finding. First, previous research has often used general measures of parenting stress (i.e., the Parenting Stress Index; Abidin, 1986) whereas this study used a measure specifically designed to examine parenting stress associated with raising a child with ADHD (i.e., the DBSI; Johnson & Reader, 2002). In addition, whereas previous research typically examined overall parenting stress, this study examined two facets of parenting stress (i.e., amount experienced and perceived stressfulness). Finally, this study only examined parents of children with ADHD and did not have a comparison group of parents of children without ADHD. Therefore, it is possible that the unique findings in this study could be due to the instrument used to measure parenting stress and the sample recruited for this study.

When the relation between child ADHD and ODD/CD symptoms and parental depressive symptoms was examined, an additive effect was detected. In other words, although the interaction between child ADHD and ODD/CD symptoms was not significant, the main effects for both child ADHD symptoms and child ODD/CD symptoms were significant. This indicates that not only are more severe child ADHD symptoms related to greater parental depressive symptoms, but the presence of additional child ODD/CD symptoms are associated with an increased likelihood of parents experiencing depressive symptoms. Similar results were obtained in a study by Johnston (1996) that compared parents of children with ADHD and low or high levels of ODD symptoms with parents of children without ADHD or ODD. In that study, an additive effect was also detected, such that parents of children with ADHD reported greater depressive symptoms when compared to parents of children who did not have ADHD, with parents of children exhibiting high ODD symptoms reporting even greater depressive symptoms than parents of children with low ODD symptoms (Johnston, 1996). Some have suggested that the additive effect of child ADHD and ODD symptoms may be due to the fact that the behaviors associated with these diagnoses challenge parents' sense of competence and parenting self-esteem, which contributes to lower satisfaction in the parenting role, less perceived control over the child's behavior, and greater psychological distress (Harrison & Sofronoff, 2002; Johnston, 1996). As such, the accumulation of greater child acting out and oppositional behavior problems likely contributes to greater parental distress.

Child ODD and CD symptoms did not function as a moderator variable as expected. Contrary to what was hypothesized, child ODD/CD symptoms did not moderate the relation between child ADHD symptoms and parental depressive symptoms or total parenting stress experienced. Conversely, the interaction between child ADHD and ODD/CD symptoms was significant when degree of parenting stress was examined as an outcome, suggesting that child ODD/CD symptoms may moderate the relation between child ADHD symptoms and degree of parenting stress. However, when this interaction was explored further, results were not meaningful and indicated a positive relation between child ADHD symptoms and degree of parenting stress under conditions of both low and high child ODD/CD symptoms. Thus, post-hoc probes failed to support the hypothesis that child ADHD symptoms would be related to degree of parenting stress only under conditions of high child ODD/CD symptoms. Given the number of analyses completed in this study, it is possible that this finding may have emerged by chance and therefore should be interpreted with caution. Finally, there was a moderate correlation between child ADHD symptoms and child ODD/CD symptoms ( $r = .31, p < .01$ ). Therefore, it is possible that the shared variance between these variables reduced the likelihood of detecting a meaningful moderator effect.

The findings from this hypothesis have important implications for researchers and clinicians who work with these families. First, research including parents of children with ADHD should always collect information on child ODD and CD symptoms because these symptoms are likely to contribute to parenting stress and psychological distress. Researchers should also carefully select measures that will capture multiple aspects of

parenting stress because different types of parenting stress (e.g. experienced versus degree of stress) may be associated with different outcomes. Finally, clinicians delivering services to families of children with ADHD should consider the unique impact ODD and CD symptoms may have on parent functioning. Interventions should aim to not only address the child's ADHD symptoms but should also address the child's acting out, defiant, and noncompliant behavior because these problems have a significant impact on the functioning of parents. In addition, these parents may need additional support services to improve their sense of competence and adaptively manage stress associated with their child's behavior (Johnston, 1996; Mash & Johnston, 1983).

### **Hypothesis 2**

The second hypothesis explored the relation between participation in an Internet support group and degree of parenting stress. Four different participation variables were examined: (1) total length of participation in the group, (2) number of visits to the group per week, (3) number of posts the parent made to the group per week, and (4) hours spent reading and writing posts per week. Contrary to what was hypothesized, none of the participation variables were related to degree of parenting stress. In other words, parents' perceived stress did not vary as a function of the extent to which they participated in the Internet support group.

There are several possible reasons why level of participation in an Internet support group was not related to degree of parenting stress. One potential reason is measurement error. Parents were asked to retrospectively self-report about their level of participation in the Internet group and it is possible that their estimation of past

participation was not accurate. Future research should aim to prospectively examine participation in Internet support groups by recruiting members who recently joined the group and observing their rates of participation over several weeks. In addition, parents were asked to select one range of participation that best captured their activity in the group (e.g., posted less than once a week, one time a week, 2-4 times a week, 4-6 times per week, daily, or multiple times per day). Therefore, it is possible that some meaningful variance could have been lost due to parents being forced to select from a range. More sophisticated technology should be used in future research to capture actual levels of participation in real time (e.g., using a daily diary method to have parents report their activity during the day, tracking the amount of time participants are logged into the group). Finally, it is also possible that level of participation may simply not be related to the outcomes of individuals who participate in Internet support groups. Although one study found that individuals with higher rates of participation in an Internet support group reported less perceived stress compared to those with lower participation (McKenna, 2008), other studies have failed to find a relation between participation in Internet support groups and significant improvements in psychological functioning (Eysenbach et al., 2004). However, the majority of previous research has neglected to examine the relation between level of participation in an Internet support group and participant outcomes. Therefore, more research is needed to better understand how level of participation is related (or not related) to participant outcomes.

The potential moderating role social support exerted on the relation between level of participation and degree of parenting stress was also examined. Two different types of

social support were explored: enacted support from the Internet support group (i.e., amount of support received from others) and perceived support from the Internet support group (i.e., satisfaction with the support received). Perceived support yielded no significant two- or three-way interactions across the four participation variables. However, a different pattern emerged for enacted support. No significant two- or three-way interactions were found for two participation variables (hours spent reading and writing posts per week, total number of posts per week), but a significant three-way interaction between enacted support, child ADHD symptoms, and two of the participation variables (length of participation in the group, total visits to the group per week) was detected.

When the three-way interaction for total visits to the group per week was examined further, none of the regression equations yielded a significant simple slope. Therefore, exploring the interaction did not provide meaningful results. Conversely, for length of participation, significant results emerged under conditions of low child ADHD symptoms and low length of time participating in the group. Participants who reported lower ADHD symptoms for their child, a lesser length of time participating in the group, and lower enacted support from the group reported a greater degree of parenting stress when compared with parents who reported lower ADHD symptoms for their child, a lesser length of time participating in the group, and greater enacted support from the group. In other words, enacted support was negatively related to parenting stress for parents who recently joined the Internet support group and who had children that exhibited fewer ADHD symptoms.

Although only one three-way interaction yielded significant, meaningful results, findings from the exploration of this interaction provide some insight into the impact of social support obtained through participation in an Internet support group. Findings suggest that enacted social support obtained online may buffer the impact of stress for parents who more recently joined an Internet support group and who have children with less extreme behavior problems. On the other hand, enacted social support has a less meaningful impact on parents who have participated in the support group for a longer period of time and who have children with more extreme child behavior problems.

The finding that enacted support buffers the impact of stress only for those parents who have more recently joined an Internet support group may indicate that different phases of group membership are associated with different outcomes. Previous psychotherapy research has found that early phases of therapy are typically associated with significant improvements in well-being, with improvements in symptoms and functioning occurring later in treatment (Howard, Lueger, Maling, & Martinovich, 1993). Similarly, stages of change models have demonstrated that an individual's stage of change (e.g., precontemplation, contemplation, preparation, action) is associated with their behavior and subsequent outcomes in psychotherapy (McConnaghy, DiClemente, Prochaska, & Velicer, 1989; Prochaska & DiClemente, 1983; Prochaska & Norcross, 2001). Therefore, it is possible that a similar phase model or stages of change model may exist for Internet support groups. For example, it is possible that receiving support from group members reduces the degree of stress experienced by parents when they first join an Internet support group, but that the impact of enacted support plateaus or diminishes



over time. In addition, previous research has found that when individuals first join face-to-face or Internet support groups, they typically seek advice and support from others, but over time they begin to also provide advice and encouragement to group members (Constant et al., 1996; Madara, 1997; Solomon et al., 2001). Therefore, it is possible that parents who have participated in the group for a longer period of time take on a different role in the group (e.g., share about their previous successes and failures with new group members, take on leadership roles), and thus they may engage in different behavior and seek support in different ways. Future research should explore different behaviors of Internet support group members longitudinally to better understand how support-seeking behavior may change over time. Furthermore, a potential phase model should be explored to determine if different phases of group membership are associated with different outcomes.

Finally, the finding that enacted social support was a significant moderator only for parents of children with lower levels of ADHD symptoms suggests that social support may be more beneficial to parents of children with less severe behavior problems. It is possible that parents of children with more severe behavior problems experience levels of stress that are beyond the scope of Internet support groups, therefore they may need greater professional services to manage extreme parenting stress. Previous research on parent support groups has neglected to examine the potential interaction between severity of child symptomatology and social support, as well as the impact of these variables on parent functioning (e.g., Cook et al., 1999; Floyd & Gallagher, 1997; Shapiro, 1989; Shechtman & Gilat, 2005). Future research should further explore this potential

interaction to better understand how severity of child behavior problems may impact the relation between social support and parent functioning.

Finally, several covariates yielded significant effects in the overall regression equation (i.e., time to complete survey, parent gender, parent education, parent income, parent age, previous treatment use, enacted support from friends), but one covariate that particularly warrants further attention is previous treatment use. There was a positive relation between previous treatment use and degree of parenting stress, meaning that parents who reported using more treatment techniques to address their child's ADHD symptoms also reported a greater degree of parenting stress. Although contrary to what was expected, there are a few potential reasons for this finding. First, it is possible that being involved in multiple forms of treatment is directly related to parenting stress due to factors related to receiving treatment. For example, parents may need to rearrange their schedule to attend multiple appointments and they may experience a financial burden associated with treatment (Reader et al., 2009). Additionally, parents participating in behavioral therapy may be required to learn and implement complicated interventions which could contribute to parenting stress (Chronis et al., 2006; Kazdin & Whitley, 2003). Second, parents who seek more treatment for their child may also be more likely to experience more parenting stress due to a latent parent variable such as personality style. Finally, some other third variable (e.g., length of time the child has been in treatment, parent cognitions about treatment) may have contributed to this finding. Although this study did not examine treatment use outside of the Internet support group in depth, the positive relation between treatment use and parenting stress is something

that researchers and clinicians should be aware of and is a topic of inquiry that merits further research.

Taken together, the findings from this hypothesis suggest that level of parent participation in an Internet support group is not directly related to perceived parenting stress. In addition, in most cases the amount of support parents receive from the Internet support group (i.e., enacted support) and parental satisfaction with the support they receive from the Internet support group (i.e., perceived support) does not moderate the relation between participation in the group and degree of parenting stress. However, for parents newer to the Internet support group and whose children exhibit less extreme ADHD symptoms, greater enacted support from the Internet support group is associated with a lower degree of parenting stress. These findings suggest that the impact of social support may not be uniform across parents, but instead may differ as a function of certain child or parent variables (e.g., severity of child behavior problems, length of time participating in an Internet support group). Future research should explore other factors that may influence the impact of social support on parenting stress to better understand the function of social support and to identify which parents may benefit most from joining an Internet support group.

### **Hypothesis 3**

The relation between participation in an Internet support group and parental depressive symptoms was examined in the third hypothesis. The four participation variables mentioned above were also explored in this hypothesis (length of participation in the group, number of visits to the group per week, number of posts per week, and

hours spent reading and writing posts per week). None of the participation variables yielded a significant main effect. In other words, parental depressive symptoms did not vary as a function of the parent's level of participation in an Internet support group. As with the second hypothesis, it is possible that measurement error or inaccurate reporting of level of participation by participants could have contributed to these results.

Neither enacted nor perceived support moderated the relation between participation in the group and parental depressive symptoms. In addition, perceived support was not significantly related to parental depressive symptoms (i.e., a main effect was not found). However, enacted support did yield a significant main effect in analyses. After controlling for covariates and child ADHD symptoms, enacted support was positively related to parental depressive symptoms. Thus, the direction of the effect indicated that greater enacted support was associated with greater depressive symptoms, which was contrary to what was expected. However, this finding is consistent with some previous research which found that greater enacted support was associated with greater psychological distress (Barrera, 1986; Belle, 1982; Podolski & Nigg, 2001). Some have suggested that the positive relation between stress and social support may indicate that stressful experiences cause a person to seek out support to cope with those experiences (Barrera, 1986). Therefore, it is possible that parents with greater depressive symptoms seek a greater amount of support to help them cope with the difficulties they are experiencing. Due to the fact that this was not a longitudinal study, conclusions about the direction of this effect cannot be made. Longitudinal research is needed to better understand the relation between depressive symptoms and enacted support.

The findings from this hypothesis indicate that the presence of depressive symptoms impact the extent to which parents seek support from others, but do not predictably impact the degree to which parents are satisfied with the support they receive. Depressive symptoms are often associated with negative thought patterns and a pessimistic way of viewing the world (Beck, 1995; Cunningham et al., 1988; Gerdes et al., 2007; Suarez & Baker, 1997). As such, this depressive attributional style may influence parents' perception of the helpfulness of support in ways that were not examined in this study (e.g., parents did not believe techniques that worked for other parents would work for them, hearing about others' successes made parents feel worse about themselves). Future research should further explore the mechanisms by which depressive symptoms influence the impact of social support on parent functioning.

Finally, it is important to recognize the possibility that the measure of perceived social support used in this study may not have adequately captured parents' satisfaction with the support they received. Parents were asked to rate whether they wanted more, less, or the same amount of support, and responses were scored dichotomously (satisfied, not satisfied). Therefore, a measure utilizing a Likert scale to assess satisfaction with support may have provided a better opportunity to explore differences in the degree to which parents were satisfied with the support they received.

Findings from this hypothesis highlight the importance of researchers carefully operationalizing and measuring social support in research. Enacted support was related to parental depressive symptoms, while perceived support was not. In addition, instead of having a buffering effect, enacted support was associated with greater parental distress.

Therefore, researchers should be careful to not make broad generalizations about the impact of social support and should instead look at different facets of social support.

### **Limitations**

Although this study provides important information about the impact of participation in an Internet support group for parents of children with ADHD, it also has several limitations that should be mentioned.

Sampling bias represents one limitation of this study. The survey invitation could only be posted to groups that provided permission and access to the researcher, and three moderated groups did not permit the survey to be posted to the group. Therefore, parents who belonged to those groups did not have the opportunity to participate in this study. Consequently, it is unknown if the results from this study generalize to individuals in those groups. Future research could include more Internet support groups and use advanced statistical methods (e.g., hierarchical linear modeling) to account for potential group effects and the confounding factor of nested data. In addition, with the exception of one group, the percentage of group members who participated in this study was very low (under 1%). Thus, the sample derived represents a selective group of individuals who chose to participate in the research and dedicate time to completing the measures. It is possible that this select group may not be representative of parents who participate in Internet support groups in terms of their experiences in the group, their level of participation, or their functioning.

There are also potential problems related to the generalizability of these findings. First, the majority of parents reported they were married, highly educated, and from

middle socioeconomic backgrounds. Therefore, it is possible that study findings may not generalize to parents from different backgrounds (i.e., single parents, parents from lower socioeconomic groups). Due to the fact that this is the first known study to examine Internet support groups for parents of children with ADHD, it is not known if the demographic characteristics of parents in this study represent those of the typical parent who participates in an Internet support group, or if parents with these demographic characteristics were simply more likely to participate in the research study. Additional research is needed to better understand the demographic backgrounds of parents who participate in Internet support groups. Another concern about the generalizability of findings is that the mean score on the two outcome measures (i.e., CES-D and DSBI) was significantly higher than that obtained in previous research with parents of children with ADHD. This study did not have a comparison group, therefore it is unknown if elevated scores on these measures are representative of parents who participate in Internet support groups or if parents who participated in this study experienced above average levels of distress.

There were also five limitations associated with the measures used in this study. First, child gender was mistakenly omitted from the original posting of the survey measures. Therefore, child gender could not be examined as a covariate in regression analyses. Second, parent experiences with traditional forms of treatment for ADHD (e.g., medication, parent training, therapy) were only broadly measured and most parents did not provide enough information to explore dosage of treatment in analyses. In addition, the measure of previous treatment use only yielded one factor consisting of six items.

Thus, while this study attempted to control for the effect of previous treatment use in regression analyses, it is possible that the scale that was used did not capture the full range of parent experiences with treatment for their child's ADHD. Previous research has found that certain treatments, such as medication, may be related to parent outcomes, such that family functioning improves when children have a positive response to treatment (Barkley, 2003; Hechtman, 1996). Unfortunately, it is unclear how experiences with medication and other forms of treatment outside of the Internet support group may have impacted the functioning of parents included in this study. Fourth, as mentioned earlier, the measure assessing participation in the Internet support group was designed for this study and has not been validated in previous research. Thus, it is possible that attempts to measure participation did not capture the full range of experiences of parents. Furthermore, given the poor internal consistency of the four-item measure of participation, it is possible that a singular construct of participation may not exist, but instead there are multiple constructs, which may be related to different outcomes. Future research is needed to develop a tool that more accurately measures constructs related to participation in an Internet support group. Finally, all measures in this study were completed by one parent; therefore, shared method variance is an issue. Given the possibility that parents who experience greater stress and depressive symptoms may also perceive their child's behavior problems as more severe (Baker, 1994; Chronis et al., 2004; Cunningham et al., 1988; Gerdes et al., 2007), future research could be strengthened by including other reporters of child behavior problems (e.g., other



parent/caregiver, teacher) to gain a more comprehensive understanding of the relation between child symptoms and parent functioning.

The cross-sectional research methods used in this study also constitute a limitation. Many parents reported they had participated in the Internet support group for several months and 35% of the sample had participated in the group for over one year. There is some evidence to suggest that over time, group members' behavior in a support group changes, such that they initially primarily seek support from others but eventually begin to provide support to others (Solomon et al., 2001). It is impossible to know how parents' early experiences in the group impacted the report of their experiences and functioning in this study. In addition, parents' initial levels of parenting stress and depressive symptoms prior to joining the group are unknown, so conclusions cannot be drawn about the impact of the group on possible changes in these symptoms. Longitudinal research is needed to better understand the characteristics of parents when they first join an Internet support group and the impact participation in the group exerts on these characteristics over time. In addition, longitudinal research that utilizes data collection methods sensitive to measuring short term changes in parental functioning (e.g., daily diary method) would provide valuable insight to the possible ebb and flow of a parent's need for support from an Internet support group over time, and how social support received from the group impacts day-to-day functioning.

Finally, due to the fact that this research took place on the Internet, the identity of participants and the validity of their responses could not be verified. Therefore, it is possible that some individuals who did not meet study eligibility criteria (e.g., person was

not a parent of a child with ADHD) could have completed the survey falsely.

Additionally, data from 35 participants (15% of the initial sample) were not included in analyses due to unusual or invalid response patterns (e.g., answered all questions with the same answer). While these surveys were omitted because of obvious concerns about response patterns, it is possible that other participants who were included in analyses may also have responded randomly or inaccurately. Finally, the length of time that parents took to complete the survey was significantly related to the outcomes, such that parents who completed the survey more quickly reported higher rates of parenting stress and depressive symptoms. Unfortunately, the survey software used for this study did not have a mechanism for controlling the pace with which parents completed the survey. It is possible that some parents may have hurried through the survey and were less thoughtful with their responses. Although the length of time parents took to complete the survey was included as a covariate in regression analyses in an attempt to control for the impact of this variable on outcomes, it is possible that differences in response time rates could have impacted the validity of the data as well as the results.

### **Conclusions and Future Directions**

Despite the limitations mentioned above, this study also had several strengths. First, whereas previous studies examining Internet support groups have often lacked the statistical power needed to detect effects (Eysenbach et al., 2004), power calculations were made prior to data collection and the sample size exceeded what was necessary to obtain sufficient power (Cohen, 1992). Second, while previous research conducted on Internet support groups has often been qualitative in nature (e.g., Barnett & Hwang,

2006; Bruwer & Stein, 2005; Coulson, 2005; Mendelson, 2003; Perron, 2002), this study used quantitative research methods to explore participant outcomes and possible moderating variables. Third, this study examined four different aspects of participation in an Internet support group (i.e., length of participation, number of visits per week, number of posts per week, hours spent reading and writing posts per week) to explore potential differences in outcomes related to level of participation. Previous research has often hypothesized about how rates of participation may be related to participant outcomes (Bruwer & Stein, 2005; Buchanan & Coulson, 2007; Eysenbach et al., 2004; Lamberg, 2003; McKenna, 2008; Tanis, 2007), but the majority of research has neglected to adequately explore the possible impact of this variable. Fourth, some have been critical of the way in which previous research has defined and measured social support (Barrera, 1986; Thoits, 1982), and contradictory outcomes have often been blamed on measurement error. Therefore, the current study utilized a measure of social support (i.e., the MDSS; Neuling & Winefield, 1988; Winefield et al., 1992) that examined two different facets of this construct: enacted support and perceived support. Additionally, these two constructs were examined separately in analyses to explore their unique relation with the outcome variables. Finally, this study included parents of children with ADHD, a group particularly vulnerable to experiencing parenting stress and depressive symptoms (Barkley, 2003; Brassett-Harknett & Butler, 2007; Cunningham et al., 1988; Fischer, 1990; Matza et al., 2005; Pelham et al., 2005), but that has surprisingly been neglected in previous research examining Internet support groups. Thus, this study represents an important first step in better understanding how parents of children with

ADHD access and participate in Internet support groups and the potential impact their participation in the group has on their psychological functioning.

The results of this study provide important information for families, clinicians, and moderators of Internet support groups. Notably, the majority of parents reported multiple positive experiences in the Internet support group. This suggests that Internet groups may represent a valuable resource for a vulnerable population of parents that are subject to increased risk of experiencing parenting stress and mental health problems. In addition, over half of the participants in this study were fathers. Although the exact percentage of fathers who participate in Internet support groups is not clear, findings from this study indicate that Internet support groups represent a possible way of reaching fathers who are often absent from clinical research.

Future research should continue to explore the characteristics of the broad range of parents who participate in Internet support groups as well as the impact of these groups on parent functioning. Parents from diverse demographic groups should be recruited for research to better understand the impact participation in Internet support groups has on parents from various backgrounds. In addition, moderators of Internet support groups should be educated on the importance of research so they are more open to allowing researchers into their groups to provide their group members with the opportunity to participate in research. Research with parents of newly diagnosed children or with parents who only recently joined the group is also needed to better understand the impact of these groups on parent functioning over time. Finally, better quality control measures are needed in Internet research to limit inaccurate response patterns by participants.

Internet support groups will most likely continue to grow in popularity as access to the Internet expands and the popularity of social media increases. Clinical research has largely neglected to examine the impact of these groups on parent functioning. However, it is essential that researchers continue to explore the impact of these groups to better understand potential positive and negative experiences associated with participation in Internet support groups. Although much work remains, this study represents an important first step in better understanding the impact of Internet support groups on parents of children with ADHD.

APPENDIX A  
INFORMED CONSENT DOCUMENT

## CONSENT TO PARTICIPATE IN RESEARCH

**Project Title:** *Internet support groups for parents of children with ADHD: An examination of the characteristics of group members and the impact of social support on parent functioning*

**Researcher(s):** *Kriston B. Schellinger, MA*

**Faculty Sponsor:** *Scott Leon, Ph.D.*

**Introduction:**

You are being asked to take part in a research study being conducted by Kriston B. Schellinger for a doctoral dissertation under the supervision of Scott Leon, in the Department of Psychology at Loyola University of Chicago.

You are being asked to participate because you are a member of an Internet support group for parents of children with Attention-Deficit/Hyperactivity Disorder (ADHD). You are eligible to participate in this study if you: 1) are at least eighteen years of age, 2) are able to read English fluently, 3) are the parent of at least one child who has ADHD, and 4) participate in at least one Internet support group for parents of children with ADHD.

Please read this form carefully and ask any questions you may have before deciding whether to participate in the study.

**Purpose:**

The purpose of this study is to better understand the use of Internet support groups for parents of children with ADHD. In addition, this research aims to understand the impact of these groups on parenting stress and parent functioning.

**Procedures:**

If you agree to be in the study, you will be asked to complete an online survey where you will be asked questions about your experiences in the Internet group, your child's ADHD symptoms, and your own functioning. It is estimated that the questionnaire will take 25-35 minutes to complete. Once you begin the survey, you may exit it and return to it as often as needed.

**Risks/Benefits:**

*The risks associated with this study are minimal. Some items on the surveys ask about sensitive information about your own mental health or your child's behavior problems which might be perceived as stressful and upsetting by some parents. In addition, some parents might perceive the length of the surveys as burdensome.*

There are no direct benefits to you from participation, but the information you provide will help contribute to the knowledge base about Internet support groups for parents of children with ADHD which could benefit other parents in the future.

**Compensation:**

Upon completion of all survey measures, you will have the option to receive a \$5 electronic gift certificate to Amazon.com or Kmart/Sears. To receive this compensation, you must provide your email address and select your desired gift certificate. If you choose to withdraw from the study and do not complete all survey measures, you will not be eligible to receive the gift certificate.

**Confidentiality:**

*Confidentiality will be maintained to the degree permitted by the technology used. Your participation in this online survey involves risks similar to a person's everyday use of the Internet.*

*The researcher will keep all records from this study private. All data you provide will be linked to a unique numeric code assigned to your survey when it is created.*

*The researcher will not attempt to link your responses to the survey measures with your message posts on the Internet group. In addition, the information you provide in your responses will not be shared with anyone in the Internet support group.*

*If you choose to provide your email address to receive the reward, your email address will be kept separately from your survey responses. Your email address will not be linked to the responses you provide to the survey measures.*

*Any research publications that come out of this project will not include any information that would make it possible to identify a participant or the name of the Internet groups included in the study.*

**Voluntary Participation:**

*Participation in this study is voluntary. If you do not want to be in this study, you do not have to participate. Even if you decide to participate, you are free to not answer any question or to withdraw from participation at any time without penalty.*

*It is important to note that if you complete an anonymous survey (i.e., do not provide your email address to the researcher) and submit your responses, it will not be possible for the researcher to identify your responses and extract your data from the database should you wish to withdraw your participation. Therefore, only those individuals who*



*choose to submit an email address with their data will be able to withdraw their responses after the survey has been submitted to the researcher.*

**Contacts and Questions:**

If you have questions about this research study, please feel free to contact Kriston Schellinger at [kschel2@luc.edu](mailto:kschel2@luc.edu) or the faculty sponsor, Scott Leon, at [sleon@luc.edu](mailto:sleon@luc.edu).

*If you have questions about your rights as a research participant, you may contact the Loyola University Office of Research Services at (773) 508-2689.*

**Statement of Consent:**

*If you choose to click the “I Accept” box below, you are providing your consent. By clicking the “I Accept” box, you are indicating that you have read the information provided above, have had an opportunity to ask questions, and agree to participate in this research study. You may contact the researcher at [kschel2@luc.edu](mailto:kschel2@luc.edu) to receive a copy of this form to keep for your records.*

\_\_\_ ***I Accept***

\_\_\_ ***I Do Not Accept***

APPENDIX B  
DEMOGRAPHIC QUESTIONNAIRE

Please provide the following information about yourself:

1. Please enter YOUR age: \_\_\_\_\_
2. Please enter YOUR sex:
  - a. Male
  - b. Female
3. Please enter YOUR race/ethnicity (check all that apply):
  - a. American Indian or Alaska Native
  - b. Asian American
  - c. Black or African American
  - d. Native Hawaiian or Other Pacific Islander
  - e. White, not Hispanic/Latino
  - f. Hispanic/Latino, specify:
    1. Cuban
    2. Mexican
    3. Puerto Rican
    4. South or Central American
    5. Other Spanish culture or origin
  - g. Other, specify: \_\_\_\_\_
  - h. Multiracial, specify: \_\_\_\_\_
4. What state do you currently live in? (Or, if not in USA, what country do you live in?):  
\_\_\_\_\_
5. What is the highest level of education YOU completed?
  - a. Did not graduate from high school
  - b. High school graduate or GED
  - c. Some college
  - d. College graduate
  - e. Master's Degree
  - f. Doctorate
6. Please indicate your current marital status (check all that apply):
  - a. Single
  - b. Single but living with partner
  - c. Married
  - d. Divorced
  - e. Widowed
7. Please estimate your annual income:
  - a. Under \$20,000
  - b. \$20,000-\$40,000
  - c. \$40,001-60,000
  - d. \$60,001-80,000
  - e. \$80,001-100,000
  - f. greater than \$100,000
  - g. Prefer not to answer
8. Number of children currently living in your household: \_\_\_\_\_

9. Please indicate if YOU have been diagnosed with or experience any of the following conditions:

- a. ADHD
- b. Anxiety
- c. Bipolar disorder
- d. Depression
- e. Substance use or abuse
- f. Other, please specify: \_\_\_\_\_
- g. None of the above

Please answer the following questions about **your child with ADHD**. If you have multiple children with ADHD, please consider the child who has been diagnosed with ADHD for the longest period of time.

10. Please indicate your relationship to the child:

- a. Biological parent
- b. Adoptive parent
- c. Step parent
- d. Foster parent or legal guardian
- e. Other, specify: \_\_\_\_\_

11. What is your child's age (in years)? \_\_\_\_\_

12. What is your child's sex?

- a. Female
- b. Male

13. Has your child been diagnosed with ADHD by a professional (e.g., family doctor, therapist, psychiatrist)?

- a. No
- b. Yes

14. If your child has been diagnosed with ADHD by a professional, who diagnosed him/her? (check all that apply)

- a. Pediatrician/Family Doctor
- b. Psychiatrist
- c. Social Worker, Counselor, Therapist
- d. Psychologist
- e. Other, specify: \_\_\_\_\_

15. At what age was your child diagnosed with ADHD? (Please round to the nearest whole number in years. If your child was not formally diagnosed with ADHD, please indicate at what age you determined your child had ADHD) \_\_\_\_\_

16. In addition to ADHD, has your child been diagnosed with any of the following? (check all that apply)

- a. Anxiety disorder
- b. Bipolar disorder
- c. Conduct disorder
- d. Depression/depressive disorder

- e. Oppositional defiant disorder
- f. Learning disorder
- g. Other, specify: \_\_\_\_\_

Please consider the **Internet support group for parents of children with ADHD** you belong to for the following questions.

17. How many Internet support groups do you belong to in total? \_\_\_\_\_
18. How long have you been participating in an Internet support group for parents of children with ADHD? If you belong to more than one, think of the first group you joined:
  - a. Less than 30 days
  - b. 1 – 3 months
  - c. 3 – 6 months
  - d. 6 months – 1 year
  - e. 1 – 2 years
  - f. 2 – 3 years
  - g. More than 3 years
19. Approximately how many times per week did you visit the group over the past month?
  - a. Less than one time per week
  - b. One time per week
  - c. 2 – 4 times per week
  - d. 4 – 6 times per week
  - e. Daily
  - f. Multiple times per day, please estimate how many times per day: \_\_\_\_\_
20. Approximately how many times per week did you post or reply to a message over the past month?
  - a. Less than one time per week
  - b. One time per week
  - c. 2 – 4 times per week
  - d. 4 – 6 times per week
  - e. Daily
  - f. Multiple times per day, please estimate how many times per day: \_\_\_\_\_
21. Approximately how many hours per week did you spend reading or writing posts to the group over the past month?
  - a. Less than one hour
  - b. 1 – 2 hours
  - c. 2 – 3 hours
  - d. 3 – 4 hours
  - e. 4 – 5 hours
  - f. More than 5 hours, please estimate how many hours: \_\_\_\_\_

22. Thinking back to when you first joined the group, please select the top 3 reasons you joined the group.

- Connect with other parents
- Obtain information about ADHD
- Obtain information about treatments for ADHD
- Share your story with others
- Have an outlet/a place to vent your frustrations
- Other, please describe: \_\_\_\_\_

23. Of those 3 reasons, which was the most important reason why you joined the group?

- Connect with other parents
- Obtain information about ADHD
- Obtain information about treatments for ADHD
- Share your story with others
- Have an outlet/a place to vent your frustrations
- Other, please describe: \_\_\_\_\_

24. Thinking back to when you first joined the group, please select the top 3 reasons why you chose to join an Internet support group instead of a face-to-face support group.

(**Note:** If you were already a member of a face-to-face support group, please respond why you chose to join an Internet support group in addition to your face-to-face support group.)

- Could be anonymous on the Internet
- No face-to-face support groups were available in my area
- Unsure how to find support groups in my area
- Group in my area did not meet at a time or place I could attend
- Convenience (ex: could access group at any time/place)
- Other, please describe: \_\_\_\_\_
- I never considered joining a face-to-face group

25. Of those 3 reasons, what is the most important reason you chose to join an Internet support group instead of a face-to-face support group?

- Could be anonymous on the Internet
- No face-to-face support groups were available in my area
- Unsure how to find support groups in my area
- Group in my area did not meet at a time or place I could attend
- Convenience (ex: could access group at any time/place)
- Other, please describe: \_\_\_\_\_
- I never considered joining a face-to-face group

26. Which treatments for ADHD did you and/or your child participate in **before** joining the Internet support group? (check all that apply)

- a. My child and I received no intervention prior to me joining the support group.
- b. Psychiatric services for my child (i.e., medication)
- c. Individual therapy for my child
- d. Family therapy
- e. Parent training programs for ADHD
- f. Face-to-face support groups

g. Other, please describe: \_\_\_\_\_

Please rate how often you have had the following positive and negative experiences in the Internet group(s) you are a member of. If you belong to several Internet groups, please only think of your participation in the group(s) you belong to for parents of children with ADHD.

24. I received advice or information I found helpful.
  - a. Never
  - b. One time
  - c. 1 – 3 times
  - d. 3 – 5 times
  - e. More than 5 times
25. A group member lied to me/the group.
  - a. Never
  - b. One time
  - c. 1 – 3 times
  - d. 3 – 5 times
  - e. More than 5 times
26. I was able to share my story with others in the group.
  - a. Never
  - b. One time
  - c. 1 – 3 times
  - d. 3 – 5 times
  - e. More than 5 times
27. I had a miscommunication with group members.
  - a. Never
  - b. One time
  - c. 1 – 3 times
  - d. 3 – 5 times
  - e. More than 5 times
28. The website was down or I experienced some other technical problem when trying to access the group.
  - a. Never
  - b. One time
  - c. 1 – 3 times
  - d. 3 – 5 times
  - e. More than 5 times
29. I felt like others in the group cared about me and/or wanted to help me.
  - a. Never
  - b. One time
  - c. 1 – 3 times
  - d. 3 – 5 times
  - e. More than 5 times

30. Some group members were overly opinionated, bossy, or dominated the conversation.
- Never
  - One time
  - 1 – 3 times
  - 3 – 5 times
  - More than 5 times
31. I was able to “vent” or discuss my frustrations and struggles with others in the group.
- Never
  - One time
  - 1 – 3 times
  - 3 – 5 times
  - More than 5 times
32. Group members argued.
- Never
  - One time
  - 1 – 3 times
  - 3 – 5 times
  - More than 5 times
33. I was bullied by group member(s).
- Never
  - One time
  - 1 – 3 times
  - 3 – 5 times
  - More than 5 times
34. I was able to provide advice to another group member or answer someone’s question.
- Never
  - One time
  - 1 – 3 times
  - 3 – 5 times
  - More than 5 times
35. Please describe any significant negative experiences you have had in the group and how they impacted your participation:
- I have had no significant negative experiences.
  - Describe: \_\_\_\_\_
36. Please describe any significant positive experiences you have had in the group and how they impacted your participation:
- I have had no significant positive experiences
  - Describe: \_\_\_\_\_



APPENDIX C  
PREVIOUS TREATMENT EXPERIENCES

Please read each treatment technique and circle the letter that best represents how often you use this technique to manage your child's behavior. If you use the technique, circle the number that indicates how effective it is with your child.

	Never Use	Sometimes Use	Often Use	Not Effective	Somewhat Effective	Very Effective
<b>Home Interventions:</b>						
1. Behavior chart or token reward system	N	S	O	0	1	2
2. Ignoring	N	S	O	0	1	2
3. Praising appropriate behaviors	N	S	O	0	1	2
4. Verbal reprimands or yelling	N	S	O	0	1	2
5. Removal of toys or privileges/ grounding	N	S	O	0	1	2
6. Spanking	N	S	O	0	1	2
7. Time out	N	S	O	0	1	2
8. Dietary restrictions or supplements (ex: limited sugar, organic food, herbs)	N	S	O	0	1	2
<b>School Interventions:</b>						
9. School behavior report note/card	N	S	O	0	1	2
10. Home-based rewards or consequences (ex: extra TV for good school behavior; no TV for bad behavior)	N	S	O	0	1	2
<b>Professional Interventions:</b>						
13. Parent training	N	S	O	0	1	2
14. Individual therapy for child	N	S	O	0	1	2
15. Individual therapy for yourself	N	S	O	0	1	2
16. Family therapy	N	S	O	0	1	2
17. Social skills training for child	N	S	O	0	1	2
18. Medication	N	S	O	0	1	2
19. In-person parent support group	N	S	O	0	1	2
20. Internet parent support group	N	S	O	0	1	2

Does your child have a 504 Plan? YES NO DON'T KNOW

Does your child have an Individualized Education Plan (IEP)? YES NO DON'T KNOW

Approximately how many sessions of individual or family therapy have your child EVER attended? \_\_\_\_\_

Approximately how many sessions of parent management training or other therapeutic intervention related to your child's behavior have you EVER attended? \_\_\_\_\_

If your child takes medication(s), what is the name of the medication and dosage?

Name of medication: \_\_\_\_\_

Dosage: \_\_\_\_\_

Name of medication: \_\_\_\_\_

Dosage: \_\_\_\_\_

Name of medication: \_\_\_\_\_

Dosage: \_\_\_\_\_

How long has he/she taken any medication for ADHD? \_\_\_\_\_

APPENDIX D

CENTER FOR EPIDEMIOLOGIC STUDIES DEPRESSION SCALE

INSTRUCTIONS FOR QUESTIONS: Below is a list of the ways you might have felt or behaved. Please indicate how often you have felt this way during the past week.

1 = Rarely or None of the Time (Less than 1 Day)

2 = Some or a little of the time (1-2 Days)

3 = Occasionally or a Moderate Amount of Time (3-4 Days)

4 = Most or All of the Time (5-7 Days)

During the past week:	Rarely/None	Some/Little	Occasionally	Most/All
1. I was bothered by things that usually don't bother me.	1	2	3	4
2. I did not feel like eating; my appetite was poor.	1	2	3	4
3. I felt that I could not shake off the blues even with help from my family or friends.	1	2	3	4
4. I felt that I was just as good as other people.	1	2	3	4
5. I had trouble keeping my mind on what I was doing.	1	2	3	4
6. I felt depressed.	1	2	3	4
7. I felt that everything I did was an effort.	1	2	3	4
8. I felt hopeful about the future.	1	2	3	4
9. I thought my life had been a failure.	1	2	3	4
10. I felt fearful.	1	2	3	4
11. My sleep was restless.	1	2	3	4
12. I was happy.	1	2	3	4
13. I talked less than usual.	1	2	3	4
14. I felt lonely.	1	2	3	4
15. People were unfriendly.	1	2	3	4
16. I enjoyed life.	1	2	3	4
17. I had crying spells.	1	2	3	4
18. I felt sad.	1	2	3	4
19. I felt that people disliked me.	1	2	3	4
20. I could not get "going."	1	2	3	4

APPENDIX E

DISRUPTIVE BEHAVIORS STRESS INVENTORY

Please indicate which events you have experienced over the past six months. Then, if you experienced the event (a “yes” response), please report how stressful you found the event.

	Experienced Event		Not at all Stressful	Somewhat Stressful	Moderately Stressful	Very Stressful
1. Not being able to leave your child with a babysitter.	Yes	No	0	1	2	3
2. Not being able to go out to eat because of your child’s behavior.	Yes	No	0	1	2	3
3. Being interrupted by your child when trying to take care of other children	Yes	No	0	1	2	3
4. Having to miss or leave church because of your child’s behavior	Yes	No	0	1	2	3
5. Dealing with teacher’s complaints about your child.	Yes	No	0	1	2	3
6. Difficulties finding professional services for your child.	Yes	No	0	1	2	3
7. Having to miss work because of your child’s problems.	Yes	No	0	1	2	3
8. Not being able to take your child shopping because of his/her behavior.	Yes	No	0	1	2	3
9. Not able to spend enough time with your other children.	Yes	No	0	1	2	3
10. Dealing with your child’s academic difficulties.	Yes	No	0	1	2	3
11. Difficulties dealing with your child’s doctors.	Yes	No	0	1	2	3
12. Difficulties getting your child to appointments with various professionals.	Yes	No	0	1	2	3
13. Spending an excessive amount of time helping your child with homework.	Yes	No	0	1	2	3
14. Not having enough time for yourself because of your child’s behavior.	Yes	No	0	1	2	3
15. Having to explain your child’s behavior to others.	Yes	No	0	1	2	3
16. Difficulties getting school-based services for your child.	Yes	No	0	1	2	3
17. Not knowing how to deal with your child’s behavior.	Yes	No	0	1	2	3
18. Disagreements with spouse about managing your child’s behavior.	Yes	No	0	1	2	3
19. Problems paying for services your child needs.	Yes	No	0	1	2	3
20. Dealing with your child’s conflicts with other children.	Yes	No	0	1	2	3
21. Calls from school regarding your child’s behavior problems.	Yes	No	0	1	2	3
22. Having to watch your child so he/she doesn’t get into trouble.	Yes	No	0	1	2	3

23. Dealing with complaints from other parents about your child's behavior.	Yes	No	0	1	2	3
24. Having to miss important social events because of your child's behavior.	Yes	No	0	1	2	3
25. Not being able to get to bed at a decent hour because of your child's behavior.	Yes	No	0	1	2	3
26. Dealing with complaints from neighbors about your child's behavior.	Yes	No	0	1	2	3
27. Being concerned about your child being injured.	Yes	No	0	1	2	3
28. Not getting work done at home because of your child's behavior.	Yes	No	0	1	2	3
29. Other people telling you how to parent your child.	Yes	No	0	1	2	3
30. Problems related to medication side effects (i.e., drowsiness, headaches, etc.).	Yes	No	0	1	2	3
31. Not knowing how to explain your child's behavior to others.	Yes	No	0	1	2	3
32. Not being able to work outside home because of your child's behavior.	Yes	No	0	1	2	3
33. Conflicts with your child over homework.	Yes	No	0	1	2	3
34. Calls from school regarding your child's academic problems.	Yes	No	0	1	2	3
35. Getting complaints from school bus driver.	Yes	No	0	1	2	3
36. Having less time with partner because of your child's behavior.	Yes	No	0	1	2	3
37. Not getting support from others in dealing with your child's problems.	Yes	No	0	1	2	3
38. Being unable to take your child to public places.	Yes	No	0	1	2	3
39. Difficulties finding adequate after school placement for your child.	Yes	No	0	1	2	3
40. Having your child embarrass you in front of others.	Yes	No	0	1	2	3



APPENDIX F

MULTI-DIMENSIONAL SUPPORT SCALE

Below are some questions about the kind of help and support you have available to you in coping with your life at present. The questions refer to three different groups of people who might have been providing support to you IN THE LAST MONTH. For each item, please rate how often you received that type of support. Then, rate whether you would have liked that support more, less, or the same from the people in that group.

A. First, think of your family (i.e., spouse/partner, parents, siblings, cousins), especially those who are most important to you.

	Never	Some- times	Often	Usually	Would you have liked?		
					More	Less	Same
1. How often did they listen to you when you talked about your concerns or problems?	1	2	3	4	M	L	S
2. How often did you feel they were really trying to understand your problems?	1	2	3	4	M	L	S
3. How often did they try to take your mind off our problems (ex: by telling jokes)?	1	2	3	4	M	L	S
4. How often did they make you feel loved or cared about?	1	2	3	4	M	L	S
5. How often did they help you in practical ways, like doing things for you or lending you money?	1	2	3	4	M	L	S
6. How often did they answer your questions or give you advice about how to solve your problems?	1	2	3	4	M	L	S
7. How often you could use them as examples of how to deal with your problems?	1	2	3	4	M	L	S

B. Second, think of your close friends who are NOT in your Internet support group.

	Never	Some- times	Often	Usually	Would you have liked?		
					More	Less	Same
1. How often did they listen to you when you talked about your concerns or problems?	1	2	3	4	M	L	S
2. How often did you feel they were really trying to understand your problems?	1	2	3	4	M	L	S
3. How often did they try to take your mind off our problems (ex: by telling jokes)?	1	2	3	4	M	L	S
4. How often did they make you	1	2	3	4	M	L	S

feel loved or cared about?								
5. How often did they help you in practical ways, like doing things for you or lending you money?	1	2	3	4	M	L	S	
6. How often did they answer your questions or give you advice about how to solve your problems?	1	2	3	4	M	L	S	
7. How often you could use them as examples of how to deal with your problems?	1	2	3	4	M	L	S	

C. Third, think of other friends/members of the Internet support group you belong to.

	Never	Some- times	Often	Usually	<u>Would you have liked?</u>		
					More	Less	Same
1. How often did they listen to you when you talked about your concerns or problems?	1	2	3	4	M	L	S
2. How often did you feel they were really trying to understand your problems?	1	2	3	4	M	L	S
3. How often did they try to take your mind off our problems (ex: by telling jokes)?	1	2	3	4	M	L	S
4. How often did they make you feel loved or cared about?	1	2	3	4	M	L	S
5. How often did they help you in practical ways, like doing things for you or lending you money?	1	2	3	4	M	L	S
6. How often did they answer your questions or give you advice about how to solve your problems?	1	2	3	4	M	L	S
7. How often you could use them as examples of how to deal with your problems?	1	2	3	4	M	L	S

APPENDIX G

VANDERBILT ADHD DIAGNOSTIC PARENT RATING SCALE

Please rate how often your child exhibited the following behaviors over the past six months.

	Never	Occasionally	Often	Very Often	Don't Know
1. Does not pay attention to details or makes careless mistakes, for example on homework.	0	1	2	3	DK
2. Has difficulty sustaining attention to tasks or activities.	0	1	2	3	DK
3. Does not seem to listen when spoken to directly.	0	1	2	3	DK
4. Does not follow through on instructions and fails to finish schoolwork (not due to failure to understand or oppositional behavior).	0	1	2	3	DK
5. Has difficulty organizing tasks and activities.	0	1	2	3	DK
6. Avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort.	0	1	2	3	DK
7. Loses things necessary for tasks or activities (ex: school assignments, pencils, books).	0	1	2	3	DK
8. Is easily distracted by extraneous stimuli.	0	1	2	3	DK
9. Is forgetful in daily activities.	0	1	2	3	DK
10. Fidgets with hands or feet or squirms in seat.	0	1	2	3	DK
11. Leaves seat when remaining seated is expected.	0	1	2	3	DK
12. Runs about or climbs excessively in situations when remaining seated is expected.	0	1	2	3	DK
13. Has difficulty playing or engaging in leisure/play activities quietly.	0	1	2	3	DK
14. Is "on the go" or often acts as if "driven by a motor."	0	1	2	3	DK
15. Talks too much.	0	1	2	3	DK
16. Blurts out answers before questions have been completed.	0	1	2	3	DK
17. Has difficulty waiting his/her turn.	0	1	2	3	DK

18. Interrupts or intrudes on others (ex: butts into conversations or games).	0	1	2	3	DK
19. Argues with adults.	0	1	2	3	DK
20. Loses temper.	0	1	2	3	DK
21. Actively defies or refuses to comply with adults' requests or rules.	0	1	2	3	DK
22. Deliberately annoys people.	0	1	2	3	DK
23. Blames others for his or her mistakes or misbehaviors.	0	1	2	3	DK
24. Is touchy or easily annoyed by others.	0	1	2	3	DK
25. Is angry or resentful.	0	1	2	3	DK
26. Is spiteful or vindictive.	0	1	2	3	DK
27. Bullies, threatens, or intimidates others.	0	1	2	3	DK
28. Initiates physical fights.	0	1	2	3	DK
29. Lies to obtain goods for favors or to avoid obligations (i.e., "cons" others).	0	1	2	3	DK
30. Is truant from school (skips school) without permission.	0	1	2	3	DK
31. Is physically cruel to people.	0	1	2	3	DK
32. Has stolen items of nontrivial value.	0	1	2	3	DK
33. Deliberately destroys others' property.	0	1	2	3	DK
34. Has used a weapon that can cause serious harm (ex: bat, knife, brick, gun).	0	1	2	3	DK
35. Is physically cruel to animals.	0	1	2	3	DK
36. Has deliberately set fires to cause damage.	0	1	2	3	DK
37. Has broken into someone else's home, business, or car.	0	1	2	3	DK
38. Has stayed out at night without permission.	0	1	2	3	DK
39. Has run away from home overnight.	0	1	2	3	DK
40. Has forced someone into sexual activity.	0	1	2	3	DK
41. Is fearful, anxious, or worried.	0	1	2	3	DK
42. Is afraid to try new things for fear of making mistakes.	0	1	2	3	DK
43. Feels worthless or inferior.	0	1	2	3	DK

44. Blames self for problems, feels guilty.	0	1	2	3	DK
45. Feels lonely, unwanted, or unloved; complains that “no one loves him/her.”	0	1	2	3	DK
46. Is sad, unhappy, or depressed.	0	1	2	3	DK
47. Is self-conscious or easily embarrassed.	0	1	2	3	DK

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Please rate your child’s performance in the following areas:

	Problematic		Average		Above Average	
1. Overall Academic Performance	1	2	3	4	5	
a. Reading	1	2	3	4	5	
b. Mathematics	1	2	3	4	5	
c. Written Expression	1	2	3	4	5	
2. Overall Classroom Behavior	1	2	3	4	5	
a. Relationship with Peers	1	2	3	4	5	
b. Following Directions/Rules	1	2	3	4	5	
c. Disrupting Class	1	2	3	4	5	
d. Assignment Completion	1	2	3	4	5	
e. Organizational Skills	1	2	3	4	5	

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## VITA

Kriston Schellinger grew up in Glendale, Arizona where she graduated from Mountain Ridge High School. She attended the University of Arizona in Tucson where she worked in the laboratories of Dr. W. Jake Jacobs and Dr. Julie Feldman. She went on to graduate Magna Cum Laude in 2005 with a Bachelors of Science in Psychology with honors in her major. In 2006, she entered the clinical psychology program at Loyola University Chicago, where she joined the meta-analysis laboratory of Dr. Joseph Durlak. While at Loyola, she also worked in the research laboratories of Dr. Grayson Holmbeck and Dr. Scott Leon. She also participated in the development of a manualized intervention for youth with co-occurring community violence exposure and disruptive behavior with Dr. Jaleel Abdul-Adil at the University of Illinois at Chicago. Ms. Schellinger's clinical training throughout graduate school focused on children with disruptive behavior problems and parent-child interactions in families of young children with emotional and behavioral concerns. After she graduates with her doctorate in clinical psychology from Loyola University Chicago in 2012, Ms. Schellinger plans to dedicate her career to issues in early childhood mental health.