

2017

Childrearing Challenges in Parental ADHD: A Pilot Study and Proposed Research Design

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Running head: CHILDREARING CHALLENGES IN PARENTAL ADHD

Childrearing Challenges in Parental ADHD: A Pilot Study and Proposed Research Design

by

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B.A., Muhlenberg College, 2011
M.S., Antioch University New England, 2014

DISSERTATION

Submitted in partial fulfillment for the degree of
Doctor of Psychology in the Department of Clinical Psychology
at Antioch University New England, 2017

Keene, New Hampshire



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DISSERTATION COMMITTEE PAGE

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**CHILDREARING CHALLENGES IN PARENTAL ADHD: A PILOT
STUDY AND PROPOSED RESEARCH DESIGN**

presented on April 7, 2017

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Acknowledgements

I would like to thank the following people for their unwavering support over the past several years. Getting to this point in my journey has not been easy, and it certainly would not have been possible without all of you.

First, to my incredible and adoring wife and best friend, Lizzie, for your love, constant encouragement, and selflessness over the past near-decade. Second, to my parents, for your unending love and support. I love you all and am beyond fortunate to have you in my life.

To my dissertation committee, Drs. Marti Straus, Daniel Lafleur, and Gina Pasquale, for your patience and wisdom. I must thank Dr. Straus, in particular, for being so much more than a dissertation chair. For challenging me, yet supporting me intellectually, professionally, and personally. For being free of judgment with constant openness and honesty. Dr. Pasquale: I will always be grateful for you stepping up so quickly and becoming such a valuable member of my committee.

Additionally, this project would not have been possible without Drs. Victor Pantesco and William Slammon. Thank you both for your dedication, dependability, and open-mindedness when this product was simply an idea. Dr. Slammon: your teaching and mentorship has been invaluable in my academic and professional development.

Lastly, thank you to all other family, friends, classmates, and supervisors who made this journey possible. Your support, patience, and enthusiasm enabled me to keep my foot on the accelerator when I had the momentum, embody self-restraint when things moved too quickly, and most importantly, never give up when I felt my back was against the wall.

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Abstract

An emerging body of research on the functional impairments of Attention-Deficit/Hyperactivity Disorder (ADHD) in adults notes that parents with ADHD are likely to experience challenges in several facets of childrearing (e.g., Chronis-Tuscano et al., 2008a; Murray & Johnston, 2006). Despite empirical evidence suggesting parents with ADHD have particular kinds of struggles, research evaluating the effects of adult ADHD treatment on parenting challenges is quite scarce. By contrast, a breadth of research indicates that adult ADHD interventions, particularly pharmacotherapy and cognitive-behavioral therapy (CBT), are effective in ameliorating ADHD symptoms. Further, CBT has shown to be an efficacious adjunctive treatment for ADHD and is associated with improvements in global functioning among ADHD-adults (e.g., Safren et al., 2005; Weiss et al., 2012). This dissertation proposes a conceptual framework outlining the mechanisms by which combined pharmacotherapy and CBT would be an effective treatment plan to address parenting challenges in adult ADHD. A small pilot study was conducted comparing parenting ratings between ADHD-parents and non-ADHD controls. The results of the pilot study are presented in the context of providing groundwork for a proposed randomized controlled trial to compare the efficacy of pharmacotherapy and combined treatment to treat parenting difficulties in adult ADHD. The implications and limitations of the pilot study, as well as anticipated implications and limitations of the theorized research, are discussed.

Keywords: ADHD, parenting, cognitive-behavioral therapy, pharmacotherapy

Childrearing Challenges in Parental ADHD: A Pilot Study and Proposed Research Design

Chapter 1: Statement of the Problem

Several empirical studies have established a robust association between the presence of Attention-Deficit/Hyperactivity Disorder (ADHD) in parents and difficulties in multiple facets of childrearing, namely (a) inconsistent discipline, (b) low levels of involvement, and (c) low levels of positive parenting (Arnold, O’Leary, & Edwards, 1997; Chronis-Tuscano et al., 2008a; Murray & Johnston, 2006). Although pharmacotherapy and psychotherapeutic interventions have attained considerable support in reducing symptoms of adult ADHD, there exists a paucity of research evaluating the effects of these treatment modalities specifically on parental functioning (Johnston, Mash, Miller, & Ninowski, 2012; Solanto, Marks, Mitchell, Wasserstein, & Kofman, 2008; Spencer et al., 2005). This gap in the adult ADHD literature poses a critical problem for both ADHD-parents and their offspring, given the fundamental importance of effective parenting for fostering psychosocial adjustment in children (e.g., Chess & Thomas, 1992; Frick et al., 1992; Johnston et al., 2012).

Childrearing deficits associated with parental ADHD can have a significant impact on the psychosocial development of offspring (Johnston et al., 2012). Research on the pathogenesis of antisocial behavior suggests that sustained involvement, consistent discipline, and positive parenting are associated with adaptive behaviors in children including lower rates of conduct problems, defiance, and aggression (Frick et al., 1992). Childrearing difficulties may hold even stronger implications for ADHD-parents than for the general population because of this disorder’s high rate of heritability (Faraone & Biederman, 2005). Given that pediatric ADHD is commonly comorbid with Oppositional Defiant Disorder (ODD), exposure to parental ADHD could trigger an underlying susceptibility towards disruptive behavior for offspring of

ADHD-parents (Johnston et al., 2012; Ramsay, 2010a).

Although parental ADHD is a relatively new area of research, the importance of parenting in ADHD has become more widely recognized at the societal level. For instance, Teeter (1998) notes that child legislation now mandates that family-based interventions, such as parent training, be provided to children with ADHD who qualify for services under Section 504 of the Rehabilitation Act of 1973. From managing medication to properly instituting a home based behavioral plan, a parent plays a crucial role in the management of his or her child's ADHD (Johnston et al., 2012; Sonuga-Barke, Daley, & Thompson, 2002). Additionally, the frustration that often ensues when raising a child with ADHD can be taxing and could consequently hinder one's ability to implement effective parenting practices. In sum, childrearing deficits in parental ADHD are likely bidirectional and present an issue that carries strong implications for the adjustment of both parents and children of families in which the challenges of ADHD cross generations (Johnston et al., 2012). Thus, it is paramount to gain an improved understanding of the degree to which existing treatment approaches can improve parental functioning.

Purpose and Structure of the Dissertation

The overarching purpose of this dissertation was to investigate the degree to which pharmacotherapy and psychosocial treatment, particularly cognitive-behavioral therapy (CBT), may improve parental functioning in adults with ADHD. The original goal of the current study was to investigate if pharmacotherapy combined with psychosocial treatment of ADHD is associated with higher levels of parental functioning compared to medication as monotherapy. Due to limitations of feasibility, this research question was not fully addressed. Data from a small pilot study were collected and analyzed to help identify characteristics and challenges of

researching the parental ADHD population and a more robust design to investigating this important area of research was proposed. It is my hope that this dissertation will serve as a springboard to future research that employs more rigorous methodologies. A Randomized Controlled Trial (RCT), such as the model I proposed in the final chapter, would be invaluable in the advancement of parental ADHD research and treatment.

Chapter 2: Relevant Background and Literature Review

Overview and Organization of this Section

The following section provides relevant context to the issue of parenting deficits in adult ADHD by including (a) a description of the features of adult ADHD; (b) a review of the modalities and efficacy of adult ADHD treatment, including pharmacotherapy and psychosocial interventions; (c) an overview of empirical studies that demonstrate parenting deficits in ADHD; and (d) a review of studies that have investigated the effects of treatment on childrearing challenges in parental ADHD.

Overview of Adult ADHD

ADHD is a neurodevelopmental disorder that is characterized by symptoms such as poor sustained attention, lacking attention to detail, hyperactivity, and impulsivity that are present in multiple settings (e.g., home and work; American Psychiatric Association, 2013). ADHD is considered to be a neurodevelopmental disorder because it is associated with functional and structural abnormalities in cerebral development that present very early in the lifespan (e.g., Shaw et al., 2007). Thus, a defining feature of this disorder is the presence of symptoms in childhood, which is the rationale behind the DSM 5 diagnostic criterion stipulating that symptoms must be apparent before the age of 12 (American Psychiatric Association, 2013; Ramsay, 2010a).

Even though the core features of ADHD are most easily discerned in children, a wide breadth of research suggests that symptoms of ADHD often persist into adolescence and adulthood (Barkley, Murphy, & Fischer, 2008). Longitudinal studies involving children who meet full or partial criteria of ADHD indicate that between 49 and 66% of individuals who present with ADHD symptomatology in childhood will meet full or partial criteria for the

disorder once they reach adulthood (Barkley, Fischer, Smallish, & Fletcher, 2006). Furthermore, epidemiological research suggests that approximately 4% of adults meet criteria for ADHD, which is comparable to the prevalence rate of many other mental health disorders (Kessler, Chiu, Demler, & Walters, 2005).

Despite substantial empirical support for the continuity of ADHD into adulthood and the common complications among ADHD-adults, much confusion exists about adult ADHD because symptoms of this disorder tend to manifest differently across developmental stages (Barkley, 2005). For instance, hyperactivity often presents quite overtly in children because of behaviors such as being unable to stay in one's seat, climbing on furniture, or appearing to "run on a motor" (Ramsay, 2010a). By contrast, when an ADHD-child reaches adulthood, hyperactivity tends to shift to a subjective, internal sense of restlessness, or a constant need to be active (Barkley, 2005).

Although symptoms of adult ADHD may, at times, appear subtle, ADHD is associated with a wide range of functional impairments in adulthood including problems with educational attainment, occupational functioning, interpersonal relations, and even driving (Barkley et al., 2006). Adult ADHD is also associated with a range of psychiatric comorbidities, including major depression and dysthymia (McGough et al., 2005). In fact, McGough et al. found that 87% of a sample of ADHD-adults had at least one psychiatric comorbidity and 56% had at least two comorbid psychiatric conditions. Higher rates of cocaine and cannabis use have also been documented among ADHD-adults (McGough et al., 2005). To summarize, ADHD does not typically remit in adulthood, is relatively common in adults, and is associated with impairment in crucial areas of functioning and a range of psychiatric comorbidities.

Adult ADHD Treatment and its Efficacy

A breadth of research has investigated the effect of pharmacological and psychosocial interventions on adult ADHD symptoms, associated areas of impairment, and psychological comorbidities. These treatment modalities include pharmacotherapy, psychosocial interventions (most commonly CBT), and combined treatment (CBT and pharmacotherapy).

Pharmacotherapy. Pharmacological agents, particularly stimulants, are considered to be a “first-line” treatment of adult ADHD, and can produce highly beneficial effects including reductions in inattention and impulsivity. These medications include Ritalin or Concerta (methylphenidate), Aderrall (amphetamine salts), Focalin (dexmethylphenidate), and Vyvanse (lisdexamfetamine). Data from several Randomized Controlled Trials (RCTs) indicate that between 50 and 80% of adults with ADHD respond positively to stimulants. Moreover, the majority of these studies have large effect sizes, suggesting that these medications can be quite powerful in ameliorating core symptoms (Dodson, 2005).

Despite this empirical support, stimulants are contraindicated for certain patients and not everybody responds to them (Ramsay, 2010a). For example, stimulants have a relatively high addiction potential because, similar to many commonly abused drugs, they activate the brain’s reward pathway. Consequently, they are not always prescribed for patients with significant substance abuse histories (Julien, 2010). In addition, Julien notes stimulant medications can have unpleasant side effects such as diminished appetite, insomnia, and headache. For patients who are unable to tolerate stimulants, several nonstimulant agents with different mechanisms of action can be administered to treat ADHD symptoms. These drugs tend to be less addictive and have a slightly improved side effect profile (Julien, 2010). Examples of these medications

include Strattera (atomoxetine), Wellbutrin (bupropion), and Provigil (modafinil) (Ramsay, 2010a).

The most widely researched nonstimulant, and the only one with FDA approval for treating adult ADHD, is Strattera (Ramsay, 2010a). Research on the efficacy of Strattera in treating adult ADHD suggests that between 55 and 75% of ADHD-adults are responsive to this drug (Dodson, 2005). These studies have yielded more modest effect sizes, indicating that this drug is somewhat less powerful than stimulant medications in reducing overall symptoms (Dodson, 2005). Nevertheless, nonstimulant agents appear to serve as a viable alternative for patients who are unable to tolerate stimulants or do not respond to them.

Psychosocial treatment approaches. Although pharmacotherapy is considered to be a “first-line” treatment for adult ADHD, there are a variety of psychotherapies that, when combined with medication, can help provide further symptom reduction and healthy lifestyle changes. Because some adults with ADHD are only partially responsive to medication, psychosocial interventions can be a powerful adjunctive treatment. These approaches can be effective in addressing psychiatric comorbidities, stressors, and functional impairments (e.g., problems with occupational, academic, or family functioning) that may not improve with medication treatment. In addition, psychosocial interventions in isolation provide a viable treatment option for individuals with mild to moderate ADHD who are either nonresponsive to pharmacotherapy or for whom stimulants are medically contraindicated (Ramsay, 2010b).

As noted, pharmacotherapy tends to be effective in reducing the core symptoms of adult ADHD (e.g., inattention, distractibility, hyperactivity). However, as is the case with many psychiatric disorders, symptom reduction in isolation is not always sufficient to long lasting and generalized emotional and behavioral change (Ramsay, 2010b). For instance, research suggests

that many individuals with ADHD who benefit from pharmacotherapy still struggle with planning and organization in daily life (Abikoff et al., 2009; Ramsay, 2012). Psychosocial interventions for ADHD help individuals learn cognitive, affective, and behavioral strategies to improve a number of deficits associated with ADHD, including problems with resistance to distraction, organizational skills, time management, and interpersonal skills (Safren et al., 2005; Solanto et al., 2008; Weiss et al., 2012). Theoretically, the benefits of combining pharmacotherapy with psychosocial interventions are bidirectional; increased attention and motivation associated with pharmacological treatment can help improve the patient's receptiveness to and availability for psychosocial interventions, and psychosocial interventions can enable patients to generalize their reduced symptoms to improve other areas of functioning.

Overview of CBT for adult ADHD. As noted, the psychosocial intervention studied most often and with most consistent results is Cognitive Behavioral Therapy (CBT). Support for CBT is further underscored by a general belief that individuals with ADHD are typically less responsive to insight-oriented interventions (Wilens et al., 1999). CBT is an empirically supported therapeutic approach that emphasizes correction of maladaptive thoughts arising from one's *schemas*, or core beliefs that tend to be developed in early life (Beck, Rush, Shaw, & Emery, 1979). In CBT, the therapist attends to the relationship among maladaptive thoughts, dysfunctional behaviors, and unpleasant emotions. For instance, patients suffering from anxiety or depression are vulnerable to developing self-defeating belief systems, which can lead to negative misperceptions of events, leaving the individual vulnerable to affective distress and engaging in maladaptive behaviors (Beck et al., 1979). Specific CBT interventions aim to restructure negative automatic thoughts through *collaborative empiricism*, the process by which

the therapist and patient discuss alternative “evidence” that contradicts self-defeating thoughts and highlights their negative impact on behavior and mood (Beck et al., 1979).

CBT for ADHD tends to have a slightly different focus, as core beliefs and cognitive distortions in ADHD differ from those seen in depression or anxiety (Ramsay, 2010b). In fact, maladaptive behavior in ADHD at times is due to a lack of forethought (e.g., impulsivity), unlike the cognitive errors seen in depression or anxiety. Individuals with ADHD are prone to unique cognitive distortions that minimize the impact of their behavioral tendencies and distractibility. For instance, patients who procrastinate tend to have false beliefs that projects need to “wait until later” or that they can only work in close proximity to a deadline. In these scenarios, it is incumbent on the clinician to increase the patient’s awareness of these false beliefs and generate alternative thoughts to modify their behavior and improve motivation. A similar focus is applied to compensate for distractibility toward competing stimuli, especially with increasing temptation involved with the lure of technology. For example, a distractible patient could rehearse the following thought: “I can wait five more minutes to check my phone” while working (Ramsay, 2010b).

There are a number of CBT approaches specifically modified for adult ADHD that address poor time management, low intrinsic motivation, and disorganization which can have a profound impact in several areas of functioning. In a comprehensive literature review, Ramsay (2010b) describes the “mechanisms of change” in CBT that are associated with improvement in functioning in adults with ADHD. These mechanisms are described below and include (a) prolongation, (b) scaffolding, (c) environmental engineering, (d) implementation strategies, (e) cognitive and behavioral modification, and (f) establishing the therapeutic alliance (Ramsay, 2010b).

In effective CBT interventions for adult ADHD, therapy sessions help develop *prolongation*, an executive skill that is often compromised in ADHD, which entails analyzing a situation, reflecting about a possible response, considering alternative options, and systematically implementing a plan (Ramsay, 2010b). In other words, CBT sessions afford patients the opportunity to discuss functional problems they are having, develop a plan, and take steps towards implementing the plan to improve those problems. *Environmental engineering*, or reshaping one's home and work environment to compensate for ADHD-related executive dysfunction, is another key element of treatment (Ramsay, 2010b). This allows the individual to lessen distraction in the environment (e.g., working in a room without television) and use external aids (e.g., electronic calendars, alarms, reminders) to stay on task.

While prolongation and environmental engineering are important facets of CBT for adult ADHD, arguably the most important goal of these interventions is to improve *implementation* and follow through (Ramsay, 2010b). Thus, the therapist works with the patient to help become more aware of *task-interfering* thoughts or behaviors and provide cognitive and behavioral modification strategies (Ramsay, 2010b). Maladaptive thoughts that are ADHD-related and task-interfering can include task aversion due to problems delaying reinforcement and the notion that it is not possible to complete a task unless it is done at the last minute (Ramsay, 2010b). *Cognitive modification* interventions help the patient correct automatic thoughts based on the evidence of his or her capabilities (Ramsay, 201b). *Behavioral modification* strategies help the patient cope with the demands of lengthy tasks by breaking large tasks down into smaller components and instituting self-talk such as, "can you commit to working on it for at least five minutes?" or "Can you commit to compiling data for at least the first section..." (Ramsay, 2010b, p. 43).

Lastly, a strong therapeutic alliance is paramount to treatment. Adults with ADHD are not always aware of the ways in which lingering symptoms and executive dysfunction interfere with different domains of their lives, and a strong alliance is necessary to effectively raise these issues in therapy. Unlike other populations, adults with ADHD often have cognitive distortions that minimize the negative impact of their behavior (e.g., procrastination), and the therapist will often need to challenge these core beliefs. These types of interventions require a certain level of trust to be well received. Empathy and validation are crucial, as certain interactions in the therapy room will often mirror many of the “failures” the patient has experienced in everyday life, such as not following through on homework (Ramsay, 2010b). As such, therapy at times can expose underlying vulnerabilities, highlighting the importance of validating the patient’s setbacks and frustrations to facilitate receptivity of interventions (Ramsay, 2010b).

Specific CBT frameworks for ADHD. There are several broad-based CBT models used to treat adult ADHD. Certain individual therapy models are skills-based, modular approaches that address intervention components in a serial fashion (e.g., Safren et al., 2005; Weiss et al., 2012), whereas other individual approaches provide more customized treatment plans (e.g., Ramsay, 2010b; Rostain & Ramsay, 2006). Shorter-term, skills-based group approaches have also been developed for adult ADHD (e.g., Bramham et al., 2009; Hesslinger et al., 2002; Ramsay, 2010b; Solanto et al., 2008).

Skills-based individual approaches tend to address specific strategies to improve one’s work or study habits and interpersonal skills to compensate for deficits that can compromise these areas of functioning (Safren et al., 2005; Weiss et al., 2006). For example, Safren et al. (2005) designed a structured approach with three core modules in organization and planning, coping with distractibility, and cognitive restructuring, as well as three supplemental modules for

patients who show difficulties with procrastination, anger or frustration, and communication skills. The modules provide specific strategies to use external aids (e.g., alarms and timers to monitor work periods and breaks, notebooks and calendar systems), psychoeducation about ADHD, and coping strategies to withstand distractions. In an RCT, Safren et al. (2005) found that ADHD-adults receiving pharmacotherapy in conjunction with this intervention reported significantly lower ADHD symptomatology compared to subjects in a medication-only group. Moreover, the combined treatment group reported lower levels of comorbid depression than the pharmacotherapy-only group (Safren et al., 2005).

Similarly, customized interventions emphasize psychoeducation about the effect of ADHD on cognition and mood, as well as coping strategies to compensate for ADHD symptomatology and executive dysfunction (Rostain & Ramsay, 2006; Wilens et al., 1999). In these interventions, coping strategies are adapted to meet the needs of the patient's functional difficulties (Rostain & Ramsay, 2006). Maladaptive thoughts that relate to ADHD-related behavioral dysfunction and comorbid mood disturbance are identified and modified through thought correction (Wilens et al., 1999). Certain approaches, such as those described by Wilens et al., take a primarily cognitive approach to treatment, placing more emphasis on tracking and correcting maladaptive beliefs or automatic thoughts. Conversely, Rostain and Ramsay's intervention focuses on the acquisition of coping skills and improving the patient's execution of learned cognitive and behavioral strategies. These approaches are associated with significant improvement in ADHD symptomatology, daily functioning, and comorbid anxiety and depression (Rostain & Ramsay, 2006; Wilens et al., 1999).

CBT groups for ADHD tend to be modular in nature, yet the specific approach to treatment varies. Certain interventions, such as Meta-Cognitive Therapy (MCT) for ADHD, are

primarily skills-based, encouraging the patient to become more aware of core beliefs and use specific coping strategies to improve daily functioning (Solanto et al., 2008). MCT presents modules addressing the following areas: (a) time management, (b) behavioral activation, (c) procrastination, (d) organizational skills, and (e) planning. In addition to specific behavioral strategies used to modify the home and work environment, close attention is paid to self-reflection and being more mindful of cognitions (Solanto et al., 2008). For instance, patients are encouraged to envision the potential positive and negative outcomes related to working on a project rather than procrastinating (Solanto et al., 2008). Another skills-based intervention was developed by Hesslinger et al. (2002) and was modeled after Linehan's original CBT treatment for borderline personality disorder (Linehan, 1993). It employs a number of skills-based modules pertaining to mindfulness as well as a psychoeducational component. Both of these approaches are associated with a reduction in core ADHD symptoms (Hesslinger et al., 2002; Solanto et al., 2008).

Other group approaches follow a cognitive remediation model that is usually employed to rehabilitate neurocognitive deficits and facilitate adjustment to disability for patients with acquired neurological conditions (e.g., Stevenson, Whitmont, Bornholt, Livesey, & Stevenson, 2002; Virta et al., 2008). These interventions provide psychoeducation about cognitive dysfunction associated with ADHD and specific compensatory strategies (Stevenson et al., 2002; Virta et al., 2008). Affective comorbidities, such as problems with depression, anxiety, and self-esteem are also addressed through psychoeducation. Research suggests that these approaches can improve ADHD symptomatology and organizational problems (Stevenson et al., 2002; Virta et al., 2008). Stevenson et al. (2002) found that these improvements were maintained a full year post-intervention.

Finally, other CBT-based groups are primarily psychoeducational (Bramham et al., 2009; Wiggins, Singh, Getz, & Hutchins, 1999). The goal of these interventions is to increase knowledge about the characteristics of ADHD and their effects on overall functioning, while providing goal-setting and environmental modification strategies (Bramham et al., 2009; Wiggins et al., 1999). Bramham et al. (2009) also developed modules to discuss comorbid anxiety, depression, and reduced self-esteem associated with ADHD and found that ADHD-participants developed significantly more knowledge about ADHD and reported higher self-efficacy than controls receiving treatment as usual.

Efficacy of combining pharmacotherapy with CBT. Several studies have examined the efficacy of integrating pharmacotherapy with CBT to treat adult ADHD (e.g., Rostain & Ramsay, 2006; Safren et al., 2005; Weiss et al., 2012). Most research has investigated the effect of combined pharmacotherapy and CBT on symptoms of inattention, hyperactivity/impulsivity, comorbid depression and anxiety symptoms, and overall functional level by administering self-report measures at baseline and over one or more follow-up periods. While these studies have employed different methodologies (e.g., between or within-groups designs), their results suggest that combined treatment can reduce inattention and concomitant mood symptoms and improve overall functional level (Rostain & Ramsay, 2006; Safren et al., 2005; Solanto et al., 2008; Weiss et al., 2012).

Two RCT's have examined the efficacy of combined treatment using a between-groups, experimental methodology (Safren et al., 2005; Weiss et al., 2012). For example, Safren and colleagues (2005) recruited thirty-one adults with ADHD on a stable pharmacological regimen and randomly assigned participants to also receive a CBT intervention (combined group) or continue with pharmacotherapy without CBT over a 15-week period. These authors found that

both groups evidenced reductions in ADHD symptom severity, depression, and anxiety. However, they observed significantly more improvement in these symptoms among participants in the combined group when compared to the pharmacotherapy group with a large effect size. (Safren et al., 2005).

Weiss et al. (2012) employed a slightly different methodology, randomly assigning ADHD-adults to either receive CBT plus dextroamphetamine or CBT plus placebo. Following a 15-week intervention, both groups demonstrated a significant improvement of ADHD symptoms and overall functional level (e.g., the overall impact of symptoms on occupational, academic, and relational functioning) using the Sheehan Disability Scale (Sheehan, 1983; Weiss et al., 2012). These gains were maintained following an additional booster session at week 20. Interestingly, there were no significant differences in overall symptom reduction or functional level between the groups, indicating that the medication did not provide added symptom reduction (Weiss et al., 2012).

Other studies from within-groups methodologies highlight the efficacy of combined treatment (Rostain & Ramsay, 2006; Solanto et al., 2008). For example, Rostain and Ramsay (2006) implemented a 16-session CBT intervention with 43 ADHD-adults on stable psychopharmacological regimens. After a 6-month follow-up, these authors found a significant reduction on ADHD, depression, and anxiety symptom self-report measures. Solanto et al. (2008) found similar results when participants completed a course of MCT. While pharmacotherapy was not a core focus of the study, Solanto et al. (2008) noted that most participants were prescribed at least one medication for ADHD symptoms. Participants reported significant improvements post-treatment in inattention, planning, organization, and comorbid mood symptoms (Solanto et al., 2008).

In sum, results from intervention studies indicate that combining CBT with medication is an effective approach to reducing ADHD symptoms, comorbid mood symptoms, and impairment in daily functioning (Rostain & Ramsay, 2006; Safren et al., 2005; Solanto et al., 2008; Weiss et al., 2012). Moreover, data comparing the effectiveness of pharmacotherapy and CBT plus pharmacotherapy suggest that combined treatment may provide added benefit for symptom reduction, mood, and overall functioning level (Safren et al., 2005).

Parenting Deficits in Adult ADHD

As previously noted, several studies have found strong associations between parental ADHD and difficulties in childrearing, namely (a) inconsistent discipline, (b) low levels of involvement, and (c) low levels of positive parenting (Johnston et al., 2012). The following section provides an overview of these facets of parenting and empirical evidence for their association with parental ADHD.

Inconsistent discipline. This construct refers to a lack of continuity in a parent's disciplinary structure (Frick et al., 1992). Inconsistent discipline is either the act of threatening to institute a punishment without subsequent follow-through, or vacillating between lax and harsh parenting tactics (Frick et al., 1992; Johnston et al., 2012). These types of parenting behaviors can be quite problematic for children, as they can muddle the depiction of the household's rules and limits. Research suggests that inconsistent discipline accounts for between 30 and 52% of the variance in the development of antisocial behavior in children (Frick et al., 1992).

The association between parental ADHD and inconsistent discipline has been present across different methodologies. Even though the majority of research on this construct has been conducted with mothers with ADHD, Arnold et al. (1997) found that in paternal ADHD, symptoms were also positively correlated with inconsistent discipline. Looking at the role of

maternal ADHD on parenting, Murray and Johnston (2006) found that mothers with ADHD evidenced significantly higher levels of inconsistent discipline when compared to non-ADHD controls. Chronis-Tuscano et al., (2008a) generated similar findings even when controlling for comorbid psychopathology and child oppositional behavior.

Further research on parental ADHD suggests that, while a variety of ADHD symptoms can account for inconsistent discipline, parental hyperactivity and impulsivity symptoms may play a larger role in this particular parenting deficit when compared to inattention. Johnston, Scoular, and Ohan (2004) examined the influence of maternal inattention, hyperactivity, and impulsivity on disciplinary consistency in a sample of 7 to 12 year-old boys with ADHD. While the mothers in the study did not necessarily have ADHD, they completed symptom inventories to assess the relationship between ADHD symptoms on parenting behavior. These authors found a significant association between mothers' reports of hyperactive and impulsive symptoms and inconsistent discipline, but not between symptoms of inattention and inconsistent discipline. Thus, these results suggest that the impulsivity and hyperactivity associated with ADHD serve as a significant obstacle to maintaining a consistent disciplinary structure for parents with ADHD, whereas inattention appears less contributory to this particular parenting challenge (Johnston et al., 2004).

Involvement. Parental involvement refers to the degree to which a parent is engaged in his or her child's everyday life and activities (Frick et al., 1992). Examples of involvement include attending sporting events or recitals, engaging the child in age-appropriate play, allowing the child to help plan household activities, and helping with homework (Frick et al., 1992; Shelton, Frick, & Wootton, 1996). Research on involvement indicates that inconsistent

involvement is a risk factor to conduct problems in offspring including aggression, oppositional behavior, and rule violations (Frick et al., 1992).

Results from several studies suggest that parents with ADHD tend to demonstrate lower levels of involvement than non-ADHD parents. For example, in a study investigating the relationship between maternal ADHD and parenting deficits, Chronis-Tuscano et al. (2008a) administered parent, child, and collateral self-report measures to a sample of mothers with ADHD and non-ADHD controls. These authors found that mothers with ADHD displayed significantly less involvement than non-ADHD participants, even when controlling for the presence of child oppositional behavior. Moreover, data from a study on paternal ADHD suggest that in families in which both paternal and child ADHD are present, fathers tend to show lower levels of involvement when compared to non-ADHD parents (Arnold et al., 1997). These findings were replicated in a more recent study in which involvement was significantly lower among fathers with ADHD than non-ADHD fathers, even when controlling for offspring psychopathology (Ellis & Nigg, 2009).

Positive parenting. While involvement refers the degree to which a parent is engaged in his or her child's daily activities, positive parenting comprises behaviors related to attunement and positive reinforcement (Frick et al., 1992). Examples of positive parenting include displaying affection, praising a child, conveying approval, or providing tangible rewards for adaptive behavior (Frick et al., 1992). Positive parenting serves as a protective factor against oppositional behavior in children (Frick et al., 1992).

Research suggests that low levels of positive parenting are an associated feature of parental ADHD, though this finding has been more equivocal than research on involvement and inconsistent discipline (Johnston et al., 2012). For example, examining the role of maternal

ADHD on mother-infant interactions, Kryski, Mash, Ninowski, and Semple (2010) found that mothers with ADHD used less language than non-ADHD mothers with their infants when recordings were coded according to a standardized system. Investigating the relationship between maternal ADHD and positive parenting in a sample with older children, Chronis-Tuscano et al. (2008a) found that mothers with ADHD demonstrated significantly less positive parenting than non-ADHD mothers. However, further analysis indicated that the presence of child oppositional behavior mediated this finding, suggesting a reciprocal relationship between low positive parenting and offspring oppositional behavior in ADHD-families (Chronis-Tuscano et al., 2008a).

The relationship between parental ADHD and positive parenting remains unclear and appears to be mediated by other variables. For example, in a study with a community sample, Ellis and Nigg (2009) found that paternal, but not maternal ADHD symptoms were negatively correlated with positive parenting. Thus, while positive parenting may correlate with parental ADHD in some samples, there may be additional factors, yet to be ascertained, that mediate this association.

It is important to note that there are similarities between involvement and positive parenting at the conceptual and psychometric levels (Clerkin, Marks, Policaro, & Halperin, 2007). Theoretically, parents who are highly attuned to their children's needs may be more intrinsically motivated to be active in their daily activities. Not surprisingly, these variables have been modestly correlated in factor analytic studies (e.g., Clerkin et al., 2007). However, there are subtle differences between dyadic attunement and being an involved parent, particularly given the unique childrearing issues experienced by ADHD-parents. For instance, certain day-to-day tasks (e.g., helping with homework) can be somewhat mundane for a parent with poor intrinsic

motivation, yet the excitement children often display following praise or affectionate behavior can be highly rewarding (Johnston et al., 2012). Research indicates that involvement is a more consistent challenge for parents with ADHD when compared to positive parenting, further illustrating the differences between these two constructs as they apply to the ADHD population (Chronis-Tuscano et al., 2008a; Ellis & Nigg, 2009).

The Effects of Treatment on Parenting Behavior in Parental ADHD

Despite the evident association between parental ADHD and challenges in childrearing, there exists a dearth of research evaluating the degree to which treatment can ameliorate these difficulties. Even though pharmacological and psychosocial interventions have attained significant efficacy in reducing symptoms of adult ADHD, there have only been two studies to date that have investigated the effect of treatment on parenting behavior in this population, both of which have focused exclusively on pharmacotherapy (Chronis-Tuscano et al., 2010; Chronis-Tuscano et al., 2008b; Johnston et al., 2012; Ramsay 2010b). No comparable body of literature explores the benefits of adjunctive psychosocial treatment for reducing parenting deficits in adult ADHD.

Both of the pharmacotherapy studies focused on the effects of stimulant medication on parenting behavior in mothers with ADHD (Chronis-Tuscano et al., 2010; Chronis-Tuscano et al., 2008b). In a preliminary study, Chronis-Tuscano et al., (2008b) employed a double-blind experimental design in which mothers with ADHD were assigned to either a treatment (Osmotic Release Oral System Methylphenidate) or placebo group for a two-phase titration period. Throughout the titration period, subjects completed the Alabama Parenting Questionnaire (APQ), a self-report measure assessing parental functioning across the domains of inconsistent discipline, involvement, and positive parenting (Shelton et al., 1996). After titration, the

treatment group showed statistically significant improvements in consistent discipline and involvement, but not in positive parenting. These authors replicated a similar design in a subsequent study. However, in the replication study, no significant effects of medication were noted for any parenting constructs (Chronis-Tuscano et al., 2010). In sum, while stimulant medications may have potential to improve parental functioning for ADHD-adults, it appears that this effect has not been observed with enough consistency to establish this intervention as a monotherapy for treating parents. Thus, it is essential to investigate the extent to which adjunctive CBT is effective in alleviating parenting challenges for this population, particularly given the efficacy of combined treatment for symptom relief and functional improvement documented more consistently in related research (e.g., Safren et al., 2005).

Summary of Relevant Background and Literature Review

Much research suggests that ADHD often persists into adulthood, is associated with a variety of functional impairments in adults, and is relatively prevalent in adults (Barkley et al., 2006; Kessler et al., 2005; Ramsay, 2010a). Fortunately, multiple treatment approaches have been associated with decreased symptomatology for ADHD-adults and research suggests that combining pharmacotherapy with CBT is the most effective treatment approach to reducing core symptoms and improving daily functioning (Ramsay, 2010b).

One area of functioning that can be particularly challenging for adults with ADHD is parenting. Results from several studies suggest that parental ADHD is associated with childrearing difficulties including (a) low levels of involvement, (b) inconsistent discipline, and (c) low levels of positive parenting (e.g., Chronis-Tuscano et al., 2008a). Only two studies to date have investigated the degree to which treatment of adult ADHD can result in improvements in parental functioning, both of which focused on pharmacotherapy. One study found that

pharmacotherapy was associated with improvements in involvement and inconsistent discipline, and the other did not result in any statistically significant findings (Chronis-Tuscano et al., 2010; Chronis-Tuscano et al., 2008b). Thus, pharmacological treatment is unlikely to be effective as monotherapy for parents with ADHD, further supporting the need to investigate the effect of CBT on parental functioning.

Chapter 3: Conceptual Frameworks of Parenting Deficits in Adult ADHD

Overview and Organization of this Section

The following section describes contemporary theories that pertain to childrearing deficits in parental ADHD. These frameworks generally center on either neuropsychological (e.g., executive dysfunction) or relational underpinnings of parenting challenges. This section also addresses ways in which combined pharmacological treatment and CBT may be able to improve parental functioning by targeting neuropsychological, relational, and psychiatric comorbidities that are associated with adult ADHD.

Neuropsychological Underpinnings of Parenting Challenges

Some ADHD theorists postulate that ADHD-parents tend to experience parenting challenges due to deficits in higher-level cognitive functions that are strongly associated with ADHD (Johnston et al., 2012). Two interrelated groups of higher-order cognitive processes that are implicated in ADHD are *Executive Functioning* (EF) and *Self-Regulation* (SR; Barkley, 2012). Below, these cognitive functions are described in depth in the context of ADHD and parenting.

Executive functioning. EF refers to an expansive set of higher-level mental abilities that need to be performed in order to accomplish everyday goals and tasks (Barkley, 2012). Consequently, EF is often referred to as *goal-directed behavior*. There are myriad cognitive skills that comprise this construct, which collectively are referred to as *Executive Functions* (EFs; Barkley 2012). Extensive data from neuroimaging studies suggest that the brain's Prefrontal Cortex (PFC) acts as the center of executive functioning, and that damage to this brain region and distal structures with prefrontal connections tends to evoke impulsive and inattentive behaviors, similar to those seen in ADHD (Carlson, 2011; Lezak, Howieson, Bigler, & Tranel,

2012). Thus, many theories of ADHD postulate that this disorder's symptoms arise out of deficits in EFs (Barkley, 2012).

ADHD is characterized by difficulties in a multitude of EFs, but those that appear to hold the strongest implications for parenting behavior are *working memory*, *intrinsic motivation*, and *inhibitory control* (Johnston et al., 2012). Working memory refers to the ability to temporarily hold information in one's immediate awareness in order to solve a problem (Barkley, 2012). Inhibitory control, by contrast, is the capacity to suppress automatic responding or impulsive behavior (Barkley, 2012). Finally, intrinsic motivation refers to one's ability to persist towards a goal in the absence of immediately available reinforcement (Barkley, 2005).

Self-regulation (SR). SR refers to the ability to maintain self-awareness and, when necessary, take *self-directed* actions in order to alter one's behavior to "make an outcome more or less likely to occur" (Barkley, 2012, p. 60). Barkley (2012) surmises that EF is subsumed under SR because an individual needs to engage in self-monitoring in order to be able to implement goal-directed behavior. For example, it would not be possible for an individual to utilize inhibitory control without the awareness that he or she needs to alter an automatic response. Similar to EF, functional neuroimaging research indicates that SR can be localized to the PFC (Lezak et al., 2012).

The relationship between EF, SR, and parenting. Research suggests that core parenting skills draw on one's executive and self-regulatory capacities (Johnston et al., 2012). To begin, poor working memory may adversely affect involvement (e.g., keeping track of appointments and school schedules), as well as positive parenting (e.g., remembering to provide positive reinforcement; Johnston et al., 2012). Moreover, deficits in inhibitory control leave a parent vulnerable to impulsively instituting unreasonable punishments that are later rescinded

(e.g., inconsistent discipline). Due to challenges with intrinsic motivation, ADHD-parents may also show a lack of persistence in relatively monotonous aspects of parenting activities that may not be perceived as reinforcing, which can manifest across several parenting skills (Johnston et al., 2012). Finally, SR appears to be involved in all three of these parenting domains, as they each require parents to monitor their own behaviors and at times, take self-directed actions in order to engage in adaptive parenting practices (Johnston et al., 2012).

Relational Underpinnings of Parenting Challenges

ADHD is associated with specific problems within the family system that can hamper parental functioning (e.g., Biederman, Faraone, & Monuteaux, 2002). Difficulties in family functioning can add palpable stress to a household, which in turn can compromise a parent's capacity to engage in effective parenting behavior (Johnston et al., 2012). As such, some researchers postulate that disruptions in family dynamics are a significant factor in ADHD-related challenges in involvement, positive parenting, and inconsistent discipline (Murray & Johnston, 2006). Below, are descriptions of three of the most vexing problems in family relations associated with adult ADHD: (a) low levels of family cohesion, (b) inconsistent family routines, and (c) home chaos.

Parental ADHD and family cohesion. Family cohesion, which refers to the degree of emotional closeness between family members, is an essential element of adaptive family functioning (Olson, 2000). Research indicates that family cohesion buffers against several forms of psychosocial maladjustment in children, such as loneliness and oppositional behavior (Sharabi, Levi, & Margalit, 2012). Furthermore, high levels of family cohesion are correlated with adaptive traits such as hope, resilience, and positive self-concept (Sharabi et al., 2012). In a study investigating the effect of parental ADHD on family functioning, Biederman et al. (2002)

found that families including a parent with ADHD tend to have lower levels of family cohesion when compared to non-ADHD families. These researchers posit that this difference occurs because the functional impairments associated with adult ADHD (e.g., problems with occupational attainment and interpersonal relations) can add significant strain to a household (Biederman et al., 2002).

Parental ADHD and family routines. In addition to low levels of family cohesion, parental ADHD is also associated with problems sustaining family routines (Murray & Johnston, 2006). Consistent family routines are associated with positive psychosocial outcomes in children, possibly because they add structure and continuity to the home (Elgar, Craig, & Trites, 2013; Fiese et al., 2002). A common example of a family routine is the “family dinner,” which can serve as a protective factor against antisocial behavior and withdrawal in children (Elgar et al., 2013). Connecting the importance of family routines to parental ADHD, Murray and Johnston (2006) found that maternal ADHD is related to difficulties regularly instituting family routines, potentially because of the organizational and motivational difficulties that are coupled with this disorder.

Parental ADHD and home chaos. Home chaos can be defined as the presence of an unpredictable and poorly structured family environment (Copraci & Wachs, 2002, as cited in Mokrova, O’Brien, Calkins, & Keane, 2010). Mokrova et al. (2010) found that families with a parent diagnosed with ADHD are particularly vulnerable to home chaos when compared to families without a parent with ADHD. These authors posit that parents with ADHD tend to experience difficulty maintaining a stable, structured home environment due to problems with inhibition and monitoring activities (Mokrova et al., 2010). This finding has significant

implications for the well being of offspring because home chaos, like other problems in family functioning, is associated with several features of maladjustment in children (Valiente, Lemery-Chalfant, & Reiser, 2007). These maladaptive outcomes include poor social skills, disruptive behavior, and difficulties in academic functioning (Valiente et al., 2007).

Applicability of Interventions to Conceptual Frameworks

As previously mentioned, there exists a scarcity of research evaluating the effects of adult ADHD interventions on parental functioning. Although the potential applicability of these interventions to parenting challenges has been discussed, it is important to explicate how these therapeutic approaches can enhance functioning on a conceptual level. Thus, this section will address the potential impact of treatment on neuropsychological and relational functioning in adult ADHD. Speaking from a theoretical perspective, improvements in these areas of functioning could provide “downstream effects” that would translate to improvements in parenting behavior.

Pharmacotherapy. From a biological perspective, pharmacological treatments for ADHD (particularly stimulant medications) can help reduce neuropsychological dysfunction due to their effects on a neurotransmitter (a chemical messenger that facilitates communication between neurons) known as Dopamine (DA; Carlson, 2011). DA plays in an integral role in the pleasure response, as it is released when individuals engage in activities that they perceive as reinforcing (Carlson, 2011). DA receptors are densely concentrated in a neural structure known as the basal ganglia, which is comprised of a group of interconnected nuclei that are embedded in the midbrain (Carlson, 2011; Lezak et al., 2012). The basal ganglia and PFC share an intricate network of neurons and neural tracts that form a *dopaminergic pathway*, which facilitates the transmission of DA between these two structures (Carlson, 2011).

Neurobiological research suggests that individuals with ADHD evidence low levels of released DA in the PFC, indicating the presence of dysfunction along the dopaminergic pathway (Carlson, 2011). This leads to reduced functionality of the PFC, resulting in poor working memory, intrinsic motivation, and inhibitory control (Chronis-Tuscano et al., 2008a). Fortunately, stimulant medications (or those with stimulant-like properties) can restore levels of DA in the PFC by increasing its availability within cells and blocking DA reuptake (Carlson, 2011). When ADHD-individuals are responsive to stimulants, these cellular processes can help alleviate inattention, aversion to delayed reinforcement, and impulsivity (Carlson, 2011; Wong & Stevens, 2012). Given the involvement of these neuropsychological functions in important domains of parenting, reductions in these symptoms may result in improved capacity to engage in effective parenting behavior.

CBT. A growing body of research suggests that adjunctive psychosocial treatments, particularly CBT, can significantly augment the symptom-reducing effects of medication in adult ADHD (e.g., Safren et al., 2005). Thus, by adding CBT to a medication regimen, adult ADHD patients may exhibit further improvements in focus and motivation by developing compensatory strategies (e.g., writing to-do lists) that reduce demands on executive processes (Ramsay, 2010b). Another advantage of adding CBT to a pharmacological protocol is its usefulness in targeting psychiatric comorbidities. By improving symptoms of co-occurring diagnoses such as depression or anxiety, ADHD-parents enrolled in psychotherapy may be able to apply learned coping strategies and become better equipped to contend with the demands of parenting. Moreover, successful treatment is associated with improvements in daily functioning, possibly reducing household stress due to improved occupational, academic, or interpersonal functioning and allowing the parent to devote more mental energy to childrearing.

Summary of Section

This section discussed the neuropsychological and relational factors that underlie parenting deficits in adult ADHD, as well as the ways in which pharmacotherapy and CBT can theoretically improve parental functioning in this population. Potential neuropsychological factors of parenting challenges in adult ADHD include deficits in EF (working memory, intrinsic motivation, and inhibitory control) and SR (Barkley, 2012). Relational factors pertinent to adult ADHD include low levels of family cohesion, inconsistent family routines, and home chaos (Biederman et al., 2002; Mokrova et al., 2010; Murray & Johnston, 2006).

Pharmacotherapy has the potential to yield improvement in parental functioning due to its capacity to restore prefrontal neuropsychological functions that appear to play a role in effective parenting (Carlson, 2011; Wong & Stevens, 2012). CBT can help augment neuropsychological improvements from medication and effectively address psychiatric comorbidities that can have an impact on parenting behavior (e.g., Safren et al., 2005). Therefore, it is theorized that combining pharmacotherapy and CBT can result in optimal improvement in parental functioning for adults with ADHD.

Chapter 4: Hypotheses and Research Questions

Hypotheses

The original intent of the pilot study was to compare self-report parental functioning ratings of ADHD-parents in combined pharmacotherapy and psychosocial treatment with ratings from ADHD-parents only receiving medication. Due to sample size restrictions, the original hypotheses were not addressed in the pilot study. However, a modest sample of ADHD-adults and normal controls was recruited. Consistent with previous research, it was hypothesized that adults with ADHD would evidence higher levels of inconsistent discipline and lower levels of positive parenting and involvement when compared to non-ADHD controls. It was also hypothesized that because pharmacotherapy is considered a more common approach to treatment, base rate analyses would yield a higher number of ADHD-parents with medication-only than those who receive psychosocial interventions either in isolation or in combination with pharmacotherapy.

Research Questions

Specific research questions employed in the pilot study are listed below:

1. Do adults with ADHD show lower levels of involvement compared to non-ADHD parents?
2. Do adults with ADHD show lower levels of positive parenting compared to non-ADHD parents?
3. Do adults with ADHD show higher levels of inconsistent discipline compared to non-ADHD parents?
4. Is pharmacotherapy more common among ADHD-adults than psychosocial interventions, either in isolation or combined with pharmacotherapy?

Chapter 5: Method and Research Design

Research Design

This pilot study employed a quantitative, quasi-experimental between-groups research design. As previously mentioned, the initial goal of the study was to attain a sufficient number of participants to compare parenting ratings across interventions (e.g., pharmacotherapy and combined treatment). However, very few participants reported histories of combined treatment. The method of the study was subsequently altered as an attempt to replicate findings from prior parental ADHD studies and compare ratings of parents with reported histories of ADHD to a group of non-ADHD parents. Groups were naturally occurring, as participants were placed into groups based on their self-report about their ADHD history.

Participants. Participants were recruited from online forums and social media. Participants from the ADHD-group were recruited through the research page of two online ADHD support groups: Children and Adults with Attention Deficit Disorder (CHADD) and the Attention Deficit Disorder Association (ADDA). For non-ADHD parents, several efforts were made to recruit parents from the general community through organizations such as a local Young Men and Women's Health Association (YMWHA; formerly YMCA) chapter and a New York City public school. However, even with prior written assurances from organizational administrators, I encountered unanticipated obstacles to recruitment when the time came to enlist control participants. Thus, after several months of pursuit, I altered my strategy. Control parents were then recruited through an email to the Antioch University New England clinical psychology Psy.D. program email list and through social media (posting information about and the link to the study on Facebook).

Procedure. The study was approved by the Antioch University New England Institutional Review Board. All participants completed materials online via Survey Monkey®, scrolling through measures page by page. The first page presented was an informed consent statement (see Appendix A), which provided a brief description of the purpose of the study, explained that there was very minimal risk to participants, and stated that participants were permitted to discontinue the study at any time. Participants responded to the informed consent by clicking “yes” or “no” as to whether or not they understood and consented to the procedures and would like to proceed with the study. Participants were presented with materials in the following order: (a) the demographics and treatment history questionnaire (see Appendix B), (b) the Alabama Parenting Questionnaire (APQ; see Appendix C), and (c) a debriefing (see Appendix D), which fully described the purpose of the study and provided instructions for participants to enter a raffle for an Amazon® gift card. The entire process lasted five to ten minutes.

Measures

Alabama Parenting Questionnaire (APQ). The APQ (see Appendix C) is a 42-item self-report measure that assesses several domains of parental functioning (Shelton et al., 1996). The APQ has been implemented in a number of parental ADHD studies as well as a breadth of research involving parenting behavior (e.g., Chronis-Tuscano et al., 2008a; Chronis-Tuscano et al., 2008b; Dadds, Maujean, & Fraser, 2003; Shelton et al., 1996). It was designed for parents of children between the ages of 6 and 18. The APQ is comprised of the following subscales: (a) inconsistent discipline, (b) involvement, (c) positive parenting, (d) parental monitoring/supervision, and (e) corporal punishment (Shelton et al., 1996). Items are rated on a 5-point Likert-type scale (1- Never, 5- Always). Another version of the APQ, known as the APQ-preschool, was developed to include parents of three to five-year old children (Clerkin et

al., 2007). Items in the inconsistent discipline, involvement, and positive parenting subscales were not altered in the development of the APQ-preschool. Good internal consistency, test-retest reliability, and convergent validity have been observed for the involvement, inconsistent discipline, and positive parenting subscales in factor analytic research (Dadds et al., 2003; Shelton et al., 1996).

A total of 20 items from the parental monitoring/supervision and corporal punishment subscales were removed from the pilot study which focused on the inconsistent discipline, involvement, and positive parenting subscales. The inconsistent discipline, involvement, and positive parenting subscales comprise 22 items. Parents of three to five-year old children were included in the study because the items in the scales of interest are the same across the original and preschool versions of the scale (Clerkin et al., 2007). For the pilot study, acceptable internal consistency (greater than 0.70) was observed for all subscales, including involvement ($\alpha = 0.72$), positive parenting ($\alpha = 0.73$), and inconsistent discipline subscale ($\alpha = 0.82$) (DeVellis, 2003, as cited in Pallant, 2007). One item was removed from the involvement subscale due to a very low correlation with other items in the scale.

Demographics and treatment history questionnaire. This instrument (see Appendix B) consisted of ten items and requested participants to answer the following demographic questions: (a) age, (b) gender, (c) ethnicity, (d) household income, (e) marital status, and (f) the presence of ADHD in their child(ren). With regard to treatment history, participants were asked about (a) whether they had been diagnosed with ADHD or have ever received treatment for ADHD symptoms, (b) ADHD medication, and (c) psychosocial interventions received for ADHD.

Chapter 6: Results

The following section provides an overview of results from the pilot study. A detailed description of participant characteristics and corresponding tables are provided. Inferential analyses include a between-subjects one-way ANOVA assessing the difference of involvement, inconsistent discipline, and positive parenting across the ADHD and non-ADHD groups.

Participant Characteristics of the Original Sample

A total of 174 individuals entered the study. Fifty-seven individuals who initiated the survey did not finish and one participant did not agree to the study's informed consent statement, resulting in 116 participants. Thirty-three (28.45%) participants reported that they had a history of ADHD or had undergone treatment for ADHD symptoms, whereas 83 (71.55%) participants denied an ADHD history, resulting in placement in the control group. Across these groups, there was a drastic difference in reported household income, as non-ADHD parents had significantly higher ratings of household income, as presented in table 1. This raised concerns of an internal validity threat due to differences in parenting practices that are frequently observed among varied socioeconomic statuses (Guryan, Hurst, & Kearney, 2008).

Table 1

Income distribution for the original sample

Variable	ADHD Group <i>N</i>	ADHD Group %	Control Group <i>N</i>	Control Group %
Income range				
<20k	1	3.03%	0	0%
20-29k	6	18.18%	1	1.20%
30-39k	2	6.06%	3	3.61%
40-49k	4	12.12%	3	3.61%
50-74k	5	15.15%	12	14.46%
75-99k	5	15.15%	18	21.69%
100-150k	6	18.18%	18	21.69%
151-250k	3	9.09%	16	19.28%
>250k	1	3.03%	8	9.64%
Missing	0	0%	4	4.82%

Data screening. Due to the difference in income observed between the ADHD and non-ADHD groups, income-matched comparison groups were generated according to income intervals (e.g., \$20,000 to \$29,000) using an exact matching procedure. In an exact matching procedure, groups are *matched* according to one or more criteria (Stuart & Rubin, 2007). This is a particularly useful data screening procedure when dealing with categorical variables (Stuart & Rubin, 2007). Participants from each group are randomly eliminated until there is an equal number of participants representing each level of the matched variable. Thus, after an exact matching procedure, the sample size of each group will be equal.

A Mahalanobis distance calculation is an alternative means to data screening whereby certain data are eliminated according to their distance from the mean of the distribution (Warner, 2013). This method was considered, but exact matching was chosen because the Mahalanobis distance typically has greater utility when multiple variables require screening (Stuart & Rubin, 2007). In the pilot study, participants were randomly eliminated until each group had an equal number of participants across each interval of household income. The final matched sample (depicted in table 2 below) had a total of 52 participants. There were four participants who did not specify their income (all of whom were from the control group). These participants were also removed from the sample. Correcting for the possibly distorting effects of income on the groups resulted in the elimination of 57 control participants and only seven individuals from the ADHD group.

Table 2

Income distribution for the matched sample

Variable	ADHD Group <i>N</i>	Control Group <i>N</i>	Total %
Income range			
<20k	0	0	0%
20-29k	1	1	3.85%
30-39k	2	2	7.69%
40-49k	3	3	11.54%
50-74k	5	5	19.23%
75-99k	5	5	19.23%
100-150k	6	6	23.08%
151-250k	3	3	11.54%
>250k	1	1	3.85%
Missing	0	0	0%

Demographic characteristics of matched sample. The vast majority of the matched sample was comprised of Caucasian (94.23%) female (82.69%) participants. The average age was 40.04 years (SD = 7.63). Table 3 provides a more comprehensive overview of demographic information in the matched sample. Among the ADHD group, 17 (65.38%) participants reported receiving pharmacotherapy only, 3 (11.54%) participants reported only receiving psychosocial interventions, 2 (7.69%) individuals reported histories of combined treatment, and 4 (15.38%) individuals in the ADHD group reported no treatment history. Chi-square analyses showed that,

consistent with hypotheses, significantly more ADHD-parents received pharmacotherapy-only than any other form of treatment, $X^2 = 22.92$ (3, $N = 22$) $p < 0.01$.

Table 3

Demographic Characteristics of the matched sample

Variable	<i>N</i>	%
Sex		
Male	8	15.38%
Female	43	82.69%
Prefer not to specify	1	1.92%
Marital Status		
Married	42	80.77%
Single	2	3.85%
Divorced/Separated	7	13.46%
Living together	1	1.92%
Ethnicity		
Caucasian	49	94.23%
African American	1	1.92%
Hispanic	1	1.92%
Prefer not to specify	1	1.92%
Asian American	0	0%
American Indian/Alaska Native	0	0%
Hawaiian/Pacific Islander	0	0%
Other	0	0%

Inferential Analyses

A between-subjects one-way ANOVA was conducted for the following APQ subscales set as the dependent variables: involvement, inconsistent discipline, and positive parenting (as depicted in table 4). The independent variable was the participant's reported ADHD history (ADHD group or control group). Results revealed significantly lower levels of involvement among ADHD-parents, $F(1, 47) = 5.48, p = 0.024$. On average, ADHD-parents reported higher levels of inconsistent discipline at a level approaching statistical significance, $F(1, 47) = 3.63, p = 0.063$. There was no difference observed for reports of positive parenting, $F(1, 47) = 0.86, P = 0.36$.

Table 4

Involvement, positive parenting, and inconsistent discipline means for the sample

Variable	ADHD Group <i>M</i> (SD)	Control Group <i>M</i> (SD)
Involvement	30.88 (4.62)**	33.44 (2.89)
Positive Parenting	24.58 (2.65)	23.80 (3.21)
Inconsistent Discipline	15.72 (4.55)*	13.54 (3.32)

Note. * = $p < .10$

Note. ** = $p < .05$.

Chapter 7: Discussion

This dissertation outlined relevant literature pertaining to childrearing challenges in parental ADHD, which include problems with inconsistent discipline, involvement, and positive parenting (e.g., Chronis-Tuscano et al., 2008a; Murray & Johnston, 2006). The efficacy of interventions to treat symptoms of ADHD, including pharmacotherapy, CBT, and combined treatment, was also reviewed. There is very limited research investigating the impact of combining these traditional ADHD interventions on parental functioning. A theoretical framework discussed the ways in which combined treatment could be an effective intervention to improve parental functioning in adults with ADHD through changes in neurobiology, certain executive functions, and family functioning.

The original objective of the pilot study was to compare differences in the self-report of inconsistent discipline, involvement, and positive parenting in parents with reported histories of ADHD symptoms enrolled in pharmacotherapy alone with those receiving combined treatment. An additional sample of non-ADHD controls completed questionnaires in order to attempt to replicate results from prior studies comparing parenting behavior among adults with and without ADHD. Due to limited sample size for the combined intervention group, the relationship between ADHD treatment modality and parental functioning could not be analyzed.

However, ratings of inconsistent discipline, involvement, and positive parenting were compared between parents with reported histories of ADHD symptoms and non-ADHD parents. Consistent with prior literature and hypotheses, parents with ADHD symptoms reported significantly lower levels of involvement than non-ADHD parents. ADHD-parents also endorsed higher levels of inconsistent discipline at a level approaching statistical significance. There was

no difference between the groups among ratings of positive parenting, a finding which is consistent with at least one other study examining this variable (e.g., Ellis & Nigg, 2009).

With regard to treatment characteristics among ADHD-parents, significantly more parents reported that they were enrolled in pharmacotherapy alone than psychotherapy alone or psychotherapy combined with pharmacotherapy. In contrast to recommendations for treatment of children that look more favorably upon psychological interventions, most adult ADHD researchers describe pharmacotherapy as a “first-line” treatment (McGoey, Eckert, & Dupaul, 2002; Ramsay, 2010a). However no known studies to date have systematically assessed treatment preference in ADHD-adults. Notably, in a national survey of pediatric ADHD, McLeod et al. (2007) found that most individuals support counseling, either in isolation or in combination with pharmacotherapy, to treat child ADHD, and are less supportive of a medication-only approach to treatment.

While it is difficult to interpret the discrepancy between my findings and the public perception of pediatric ADHD treatment, it is possible that ADHD-adults tend to prefer medication over psychotherapy for themselves due to motivational and time challenges; I do not know if they believe psychotherapy would benefit their children but is less important to them. These pilot data do suggest, however that parents may prefer the idea of a “quick fix” over a longer-term, more intensive treatment. It is also possible that ADHD-adults may be hesitant to enroll in a psychotherapy in which homework is prescribed due to a resemblance to past “failures” in school and a fear of how they will be perceived by their therapist if they do not follow through (Ramsay, 2010b). Finally, adult ADHD is a newer area of inquiry; this research project arose because we know so much less about its intervention. Perhaps broader treatment

guidelines and more resources for parents contending with ADHD would make psychotherapy more compelling for them.

Despite my concerted efforts to recruit a sample that would enable me to test my original hypotheses, I was unable to find enough subjects in the mixed therapy and medication group to run meaningful analyses. One of the primary challenges, as discussed above, was the prevalence of medication-only treatment relative to psychosocial approaches. Another obstacle was limited access to clinical and research populations that might have covered a broader range of treatment characteristics. When developing my approach to participant recruitment, I reached out to several psychologists who specialize in the psychosocial treatment and research of ADHD. While I received much encouragement about my topic and efforts to better understand this population, some individuals were unwilling to disclose patient information for reasons of confidentiality, whereas others cited the burden of time and the allocation of resources as their rationale for reluctance to provide access to potential participants or data. For instance, one researcher noted that he would be willing to provide access to participants in an ongoing ADHD study, but indicated that he prefers to have an active role in research involving his participants; he simply did not have the time to be engaged in another research project. Although I was unable to conduct the pilot study I had envisioned, I have designed an RTC that would clearly provide additional useful clinical information.

Implications

The findings of low levels of involvement and borderline high levels of inconsistent discipline among parents reporting ADHD symptoms carry important implications. These findings are consistent with prior empirical studies investigating childrearing difficulties in parental ADHD (Arnold et al., 1997; Chronis-Tuscano, 2008a; Ellis & Nigg, 2009). This further

supports the theoretical framework postulated by Johnston et al. (2012), who propose that ADHD symptomatology and associated cognitive dysfunction hampers one's effective control of parenting behavior, making it difficult to proactively plan activities or arrange the logistics associated with becoming involved in a child's activities. Further, reduced inhibitory control can result in impulsive disciplinary threats, and inconsistent follow-through. For future intervention studies, it will be important to examine the extent to which core symptom reduction, psychoeducation, and improved compensatory and behavioral strategies can help enhance parental involvement and reduce inconsistent discipline.

The homogeneity of positive parenting ratings between groups raises further questions regarding the ubiquity of this deficit in the ADHD-population. As noted, research on positive parenting among ADHD-adults has been equivocal, and it is possible that certain factors may need to interact with ADHD symptomatology in order to produce deficits in positive parenting. For example, it is possible that fathers with ADHD are more prone to insufficient positive parenting, as Ellis and Nigg (2009) found that paternal, but not maternal, ADHD symptoms were negatively correlated with positive parenting. In my research, the vast majority of respondents were mothers so perhaps ADHD did not interfere with their capacity for positive parenting.

This hypothesis is supported by additional research. For example, Psychogiou, Daley, Thompson, and Sonuga-Barke (2007) found in a sample of parents and children with ADHD that among mothers with ADHD, higher levels of child ADHD symptomatology were actually associated with increased positive parenting. Therefore, it is possible that similarities between cognitive tempos may actually moderate the association between low levels of positive parenting and ADHD (Johnston et al., 2012). In sum, positive parenting is a variable that needs to be

further explored in the parental ADHD literature with a focus on factors including, parent gender, primary parenting role, and the presence or absence of ADHD in the child.

Throughout my dissertation, much emphasis has been placed on the cognitive mechanisms involved in parental functioning, given the neurodevelopmental underpinnings of ADHD. Yet, adaptive parenting behaviors such as involvement, positive parenting, and consistent discipline can also be conceptualized as manifestations of a secure attachment relationship (e.g., Johnston et al., 2012; Storebø, Rasmussen, & Simonsen, 2016). Indeed, in some studies, parental ADHD is associated with insecure attachment and the dynamics between ADHD and attachment patterns are complex and multifactorial (Storebø et al., 2016). In addition to cognitive factors that may compromise aspects of responsiveness in the attachment relationship, one must also consider the impact that offspring ADHD has on the parent-child bond. Attunement and consistency are paramount to the development of a secure attachment, but can be particularly challenging to sustain when parenting a child with ADHD, even among parents without ADHD (Storebø et al., 2016). Thus, ADHD-parents who raise a child are faced with a different set of challenges that interact with cognitive functioning (e.g., SR) that may impact the attachment relationship. Theoretically, ADHD-parents who also have a child with ADHD may be prone to a unique form of psychological burden. They may be vulnerable to a sense of guilt because of the heritability of ADHD, which could further complicate attachment security and place stress on the family system. Therefore, it is important to consider the complex interconnectedness of SR, attachment, and family dynamics as underlying factors that may account for the differences in involvement and inconsistent discipline observed in my sample.

Limitations

Methodological and statistical limitations. The pilot study was very limited in its scope and consequently, suffered threats to internal and external validity. These limitations are essential to contextualize the results of the pilot study and to inform the design of future studies. Of course, a major limitation was the study's small sample size, which was not sufficient to perform the intended analyses assessing parenting across different reported interventions. For the analyses that were conducted, the sample size was smaller than recommendations based on projected effect size (Cohen, 1992). Perhaps a larger sample would have yielded a statistically significant difference in inconsistent discipline across groups, as this has been a robust finding in the parental ADHD literature (Chronis-Tuscano, 2008a).

The quasi-experimental methodology of the pilot study is a limitation that certainly poses a threat to internal validity. Formal diagnostic screenings were not feasible in the pilot study. Consequently, participants were placed into ADHD or control groups based on their response to the following question: "have you ever been diagnosed with ADHD, or have you ever received treatment for ADHD symptoms?" By relying on self-report of symptomatology and treatment history, the risk of inclusion of non-ADHD participants into this group was inflated. Core ADHD symptoms can manifest in a number of psychiatric and medical conditions; it is conceivable that some participants had been misdiagnosed or received ADHD treatment for a different underlying condition.

Another significant limitation is the probable discrepancy between education across the ADHD and control groups in the study. Unlike income, which was controlled for through an exact matching procedure, level of education was not assessed in the pilot study's demographics and treatment questionnaire and remains an unmeasured confound. As noted, several attempts were made to obtain non-ADHD participants from a general community sample (e.g., the

YMWHA). Due to logistical challenges, the majority of control participants were obtained from the AUNE clinical psychology email list, which is comprised of doctoral students, alumni, and program faculty. Naturally, this is not an ideal comparative sample due to this disproportionately high level of educational attainment. This poses a substantial threat to internal validity, as socioeconomic status (SES), which includes educational attainment, has been associated with variability in parenting behavior. For instance, parents with lower SES tend to spend less time with children when compared to parents with higher SES (Guryan et al., 2008).

Homogeneity of certain demographic variables across the entire sample also presents a threat to external validity. As noted, some researchers have postulated that parenting challenges manifest differently in fathers and mothers with ADHD (Arnold et al., 1997; Ellis & Nigg, 2009). In the pilot study, the vast majority (85.19%) of participants were female. While the overall sample was too small to assess any differences in parenting challenges among mothers and fathers with ADHD, it is possible that men and women could have a different profile of childrearing difficulties. Thus, the results may have differed if the sample contained a higher percentage of males. The current sample was also disproportionately homogeneous in terms of race (94.23% Caucasian). This presents an additional threat to external validity, as a wide breadth of research has shown that specific parenting practices vary significantly across different ethnocultural groups (e.g., Chang & Downey, 2011).

Limitations of feasibility. There were several barriers that greatly limited the size, scale, and methodological rigor of the pilot study. While some of these obstacles were circumscribed to this particular study, other limitations are likely to occur in any research involving this population. The most significant limitation was the lack of access to the adult ADHD population, as a controlled trial would be more feasible within an existing ADHD center. Attempting to

recruit a sample of ADHD adults solely through outreach to support networks was a very challenging task.

Parental ADHD is a narrow subpopulation, which made recruitment markedly challenging. Because ADHD symptoms are typically most overtly present in childhood, the greater population is less aware of adult ADHD as a clinical syndrome. Therefore, parents with ADHD can be classified as a subgroup of a subpopulation, making it increasingly difficult to effectively target potential participants. Certain characteristics among participants that are likely related to ADHD symptomatology, may have also hindered data collection. For example, a substantial number of individuals discontinued the study despite indicating that they were parents with a history of ADHD treatment; it is possible that distractibility may have interfered with follow-through.

Future Directions: Proposed RCT

Below, I have proposed an RCT project that will include the methodologies drawn from two protocols (Safren et al., 2005; Weiss et al., 2012) to further examine the degree to which combined CBT and pharmacotherapy is associated with improvements in parental functioning among ADHD-adults. Participants will be randomly assigned to one of two groups: (a) CBT plus continued pharmacotherapy or (b) continued pharmacotherapy alone. Baseline and follow-up measures will include self and collaborative reports of ADHD symptoms, comorbid mood symptoms, overall functioning level, and a self-report measure of parental functioning, which will be the primary outcome variable. The CBT intervention will be adapted from Weiss and colleagues (2012) due to its impressive efficacy for symptom reduction and functional improvement on a measure of daily functioning. The treatment manual has a specific module on parenting, which allows participants to develop compensatory strategies that specifically target

parenting behavior (Weiss et al., 2012).

Hypotheses for proposed study. Because combined treatment is associated with improvements in a number of areas of functioning, it is hypothesized that, in the RCT, CBT plus medication (known as the combined group) will be more effective than medication alone (pharmacotherapy group) in increasing levels of involvement and reducing inconsistent discipline. In the proposed study, positive parenting will not be assessed, given the somewhat equivocal findings of its implications in adult ADHD (e.g., Chronis-Tuscano et al., 2008b). Participants' ratings of parenting behavior will be measured at baseline and at two follow-up periods following completion of the CBT intervention and an additional booster session (weeks 15 and 20). Thus, it is hypothesized that at follow-up, the combined group will have significantly lower levels of inconsistent discipline and higher levels of involvement. It is further hypothesized that both groups will evidence improvement in parental functioning at each follow-up period, but the gains will be significantly greater for the combined group.

Research questions. Specific research questions for the proposed RCT include the following:

Pharmacotherapy group.

1. Do participants in the pharmacotherapy group show increased levels of involvement at week 15?
2. Do participants in the pharmacotherapy group show increased levels of involvement at week 20?
3. Do participants in the pharmacotherapy group show reduced levels of inconsistent discipline at week 15?

4. Do participants in the pharmacotherapy group show reduced levels of inconsistent discipline at week 20?

Combined group.

1. Do participants in the combined group show increased levels of involvement at week 15?
2. Do participants in the combined group show increased levels of involvement at week 20?
3. Do participants in the combined group show reduced levels of inconsistent discipline at week 15?
4. Do participants in the combined group show reduced levels of inconsistent discipline at week 20?

Comparison of combined and pharmacotherapy groups.

1. Do participants in the combined group show significantly higher levels of involvement than the pharmacotherapy group at week 15?
2. Do participants in the combined group show significantly higher levels of involvement than the pharmacotherapy group at week 20?
3. Do participants in the combined group show significantly lower levels of inconsistent discipline than the pharmacotherapy group at week 15?
4. Do participants in the combined group show significantly lower levels of inconsistent discipline than the pharmacotherapy group at week 20?

Research design. The proposed study is an RCT with a between-groups design involving ADHD-parents on a stable course of pharmacotherapy. Participants will be randomly assigned to either a pharmacotherapy-only group or a combined group involving a structured CBT intervention. As noted, the overarching research design is modeled after Safren et al. (2005); the

proposed CBT intervention has been adapted from Weiss et al. (2012) due to its flexibility to focus on parenting difficulties. This intervention comprises seven sessions completed over a 14-week period as well as two booster sessions completed at weeks 15 and 20. Data will be collected at baseline and at weeks 15 and 20.

Participants. In order to attain a sufficiently high level of statistical power, the proposed study aims to enroll a total of 52 participants (26 per group). Based on power analyses, this sample size is required to attain statistical significance with the proposed analyses (ANCOVA) at a large effect size (Cohen, 1992). This sample size is slightly larger than similar RCT's comparing the effects of pharmacotherapy and combined treatment on symptom reduction and global functioning; these studies yielded a large effect size (Safren et al., 2005; Weiss et al., 2012).

There are a number of inclusion and exclusion criteria for this study that will likely eliminate a number of potential participants, requiring additional recruitment efforts. In line with the methodology of Safren et al. (2005), the proposed study will require participants to be on a stable ADHD medication regimen for a minimum of two months, with no more than a 10% dosage change over the prior month before entering the study. Other inclusion criteria include a primary diagnosis of ADHD using the Structured Clinical Interview for DSM 5 (SCID-5) and the presence of at least one child in the home between the ages of six and eighteen. Consistent with adult ADHD intervention research, individuals with certain comorbidities, including acquired neurological disorders (e.g., traumatic brain injury, brain tumor, stroke), psychosis, active suicidal ideation, and Autism Spectrum Disorders will be ineligible for the study (Safren et al., 2005). Participants with certain comorbidities common in ADHD, such as learning disorders, depression, or anxiety, will not be excluded (Safren et al., 2005; Weiss et al., 2012).

Participant recruitment. In order to maximize recruitment potential, the ideal setting for this research is an adult ADHD program affiliated with an academic medical center. For example, Safren et al. (2005) recruited participants from the ADHD clinic at Massachusetts General Hospital. This type of setting allows for a steady referral stream of clinical patients who may be interested in research. If feasible, financial incentives will be offered to participants. Flyers about the study will also be posted throughout the hospital and information will also be added to online ADHD forums, such as CHADD or ADDA.

Procedure. The procedure of the proposed study is modeled after Safren et al (2005). Interested participants will initially be contacted over the phone and will schedule an eligibility screening. During the phone call, they will be asked if they meet basic inclusion criteria for the study (self-report of ADHD, having at least one child between the ages of six to eighteen) and will be asked if they have any of the comorbid conditions that would warrant exclusion from the study. Once a potential participant arrives for the formal eligibility screening, the SCID-5 will be administered to determine if they meet diagnostic criteria for adult ADHD. Participants who meet eligibility criteria will be randomly assigned to the pharmacotherapy-only group or the combined treatment group. Consistent with the method of Safren et al. (2005), at the baseline assessment participants will be administered the APQ, demographics questionnaire, Beck Depression Inventory-II (BDI-II), Beck Anxiety Inventory (BAI), and the Adult ADHD Self-Report Scale (ASRS-v1.1) by an evaluator who is blind to treatment condition (Adler et al., 2006; Barkley & Murphy, 1998; Beck, Epstein, Brown, & Steer, 1988; Beck, Steer, & Brown 1996; Kessler et al., 2005). Participants assigned to the pharmacotherapy condition will continue with their regimen without CBT and participants assigned to the combined group will complete the first eight sessions (seven sessions and a booster session) of the intervention over a 15-week

period. Baseline measures will then be readministered (with the exception of the demographics questionnaire) by an evaluator blind to treatment condition. Five weeks later at week 20, the same measures will be administered once again to both groups following a second booster session.

Measures.

Alabama Parenting Questionnaire (APQ). A detailed description of the APQ (Appendix C) is outlined in the Method and Research Design section (Shelton et al., 1996). It is important to note that the proposed study will only employ the inconsistent discipline and involvement subscales, which total 16 items.

SCID-5 diagnostic interview. The SCID-5 is a semi-structured diagnostic interview developed in 2015 to assist clinicians and researchers in making DSM-5 diagnoses (First, Williams, Karg, & Spitzer, 2015). The SCID-5 will be used to ensure that participants meet diagnostic criteria for adult ADHD in order to be included in the study. The SCID has been used as an eligibility screen in a number of adult ADHD studies, including Safren et al. (2005). The ADHD module of the SCID-5 is identical to the prior version of the SCID (used for DSM-IV TR diagnostic interviewing), but includes the new criterion that symptoms must be present before the age of 12 (American Psychiatric Association, 2013).

Adult ADHD Self-Report Scale (ASRS-v1.1). The ASRS is an 18-item symptom checklist designed to evaluate symptom severity of adult ADHD in accordance with DSM criteria (Adler et al., 2006; Barkley & Murphy, 1998; Kessler et al., 2005). It has been used in a number of ADHD intervention trials, including Safren et al. (2005). Of note, an updated self-report checklist in-line with DSM-5 criteria has not been developed since the development of DSM-5,

but the diagnostic criteria has not changed significantly since DSM-5 was developed. The ASRS has demonstrated strong psychometric properties, including good internal consistency and test-retest reliability (Adler et al., 2006). Items are rated on a 5-point Likert-type scale (1- Never, 5- Very Often).

Beck Depression Inventory, Second Edition (BDI-II). The BDI –II is a 21-item self-report inventory assessing a range of depressive symptoms that was used as a baseline/outcome measure in Safren et al. (2005) (Beck et al., 1996). Items are rated on a separate 4-point rating scale (0 to 3) in order of severity. Each item has different specifiers and its own title. For instance, one item is entitled “sadness” and the ratings are as follows: “0- I do not feel sad; 1- I feel sad much of the time; 2- I am sad all of time; 3- I am so sad or unhappy that I can’t stand it.” The BDI-II has demonstrated good internal consistency, test-retest reliability, and convergent validity in factor analysis studies (e.g., Dozois, Dobson, & Ahnberg, 1998).

Beck Anxiety Inventory (BAI). The BAI is a 21-item self-report inventory that assesses cognitive, affective, and physiological manifestations of anxiety and was used as an additional baseline/outcome measure in Safren et al. (2005) (Beck et al., 1988). The structure of the BAI is different than the BDI-II; all items are rated on a 4-point Likert-type scale (0- Not at all, 1- Mildly- but it didn’t bother me much, 2- Moderately- it wasn’t pleasant at times, 3- Severely- it bothered me a lot). The BAI has demonstrated excellent internal consistency, good test-retest reliability, and moderate convergent validity (Beck et al., 1988). A sample item is “Fear of losing control.”

Demographics and treatment history questionnaire. This self-report measure will resemble the instrument employed in the pilot study (see Appendix B) with a few adjustments. Most of the demographic information (e.g., age, ethnicity gender, marital status) will be elicited

in the same manner as the pilot study. Participants will also be asked to specify their educational attainment (degree obtained and total years of education) as well as their most precise estimate of household income, as opposed to a categorical response, which was employed in the pilot study. Participants will also be asked to indicate how much time they spend with their children and whether or not they are in the role of primary or sole caretaker in the family.

Intervention. Participants will be randomized to one of two groups: (a) continued pharmacotherapy or (b) CBT plus pharmacotherapy (combined treatment). Participants in the pharmacotherapy group will continue their course of pharmacotherapy and receive rating scales at baseline and the 15 and 20-week follow-up periods.

Participants in the combined group will receive a total of nine sessions of individual CBT intervention for ADHD, known as Problem-Focused Therapy (PFT), which was implemented in the work of Weiss et al. (2012). The therapy will retain its core principles in the proposed study, beginning with a psychoeducational session explaining the neurobiological effects of ADHD, its impact on attention and emotional regulation systems, and common functional consequences of ADHD. The participants will receive seven bi-weekly training sessions (ending at week fourteen) and two “booster sessions” at weeks 15 and 20.

One adjustment will be made to PFT to suit the needs of the parental ADHD population. In the original intervention, participants selected one functional problem around which the therapy was organized (Weiss et al., 2012). One of these options was parenting difficulties, and there are a number of specific interventions related to parenting difficulties that are included in the intervention manual (Weiss et al., 2012). In the proposed study, the functional problem addressed in the intervention will be parenting for all participants. Clinicians will implement specific strategies from the treatment manual to address childrearing challenges.

The parenting module in PFT employs a step-by-step approach to intervention (Weiss et al., 2012). First, the patient discusses the specific parenting stressors that are present. The therapist then teaches explicit behavioral strategies to manage parenting behavior, such as using positive reinforcement, selective ignoring, or time-out procedures. Of course, specific interventions will depend on the age of the child. The therapist may also encourage the parent to review specific books to learn more about effective parenting practices. In addition to behavioral interventions, the therapist intervenes at the cognitive level, reframing maladaptive thoughts pertaining to guilt about parenting style or overgeneralizations about parenting “failures” (Weiss et al., 2012). When applicable, the patient is encouraged to recruit the help of significant others, such as a spouse, parent, sibling, or close friend for additional support (Weiss et al., 2012). The therapist is instructed to be specific about the ways in which others can assist with implementation of parenting strategies. The authors also recommend role-playing parenting techniques as well as efforts to engage others in certain aspects of parenting (Weiss et al., 2012).

Prior to the intervention trial, therapists will be trained in administering the treatment according to the manual. Consistent with Weiss et al. (2012), all sessions will be audio recorded (this will be detailed in the informed consent statement) to ensure fidelity of the treatment manual, yet there will be sufficient flexibility to permit therapists to employ techniques from different CBT interventions, should they fit the overarching problem-focused framework.

Proposed analyses. Although the outcome variable for the proposed study (parenting behavior) is different than the Safren et al. (2005) study (ADHD symptomatology), the overarching framework of the analyses will be the same. Consistent with Safren et al., the following analyses are recommended for the proposed study: (a) descriptive statistics and frequency data, (b) a two-way ANCOVA, and (c) effect size analysis.

Frequency data as well as means and standard deviations for a number of participant characteristics will be calculated in order to monitor possible outliers that could play a significant role in parenting and consequently confound the data. Before running analyses, the Mahalanobis distance should be employed to determine outliers for household income and level of education (Warner, 2013). Frequency data for all of the demographic information will also be collected. Means and standard deviations from the ASRS, BDI-II, and BAI will also be computed at baseline and the 15 and 20-week follow-up periods. While these measures are not central to the hypotheses of this study, it is important to obtain this data because of a potential relationship between symptom levels and parental functioning. Thus, in the event that no significant improvements in parental functioning are observed, it will be important to assess the degree to which the interventions were also associated with symptom reduction.

Consistent with Safren et al. (2005), a two-way Analysis of Covariance (ANCOVA) will be computed to determine if there is a significant difference in responsiveness to intervention between the two groups. However, two modifications will be made in the proposed study. First, the dependent variables will be the two parenting constructs investigated on the APQ in lieu of participants' ratings on an ADHD self-report measure. Second, participants' ratings at weeks 15 and 20 will be entered into the ANCOVA to determine if gains in parental functioning are maintained after the second booster session, whereas Safren et al. (2005) only had one follow-up data point. This adaptation is retained from Weiss et al. (2012) because their intervention will be employed in the proposed study. Important information about the proposed ANCOVA is listed below:

1. The independent variable is the treatment condition (level one: pharmacotherapy-only, level two: CBT plus pharmacotherapy).

2. There are a total of four dependent variables: (1) APQ involvement ratings at week 15, (2) APQ involvement ratings at week 20, (3) APQ inconsistent discipline ratings at week 15, and (4) APQ inconsistent discipline ratings at week 20.
3. There will be a total of two covariates: (1) baseline APQ involvement ratings and (2) baseline APQ inconsistent discipline ratings.

Consistent with Safren et al. (2005), I will also compute the effect sizes for the between-groups change scores for the ANCOVA I conduct. Cohen's *d* will reflect the magnitude of the difference between the CBT plus medication group and the pharmacotherapy-only group in inconsistent discipline and involvement at the 15 and 20-week follow-up periods (Warner, 2013).

Potential implications of the RCT. The proposed RCT carries a number of potential implications germane to the parental ADHD population. Improved understanding of the efficacy of interventions for parental ADHD will be essential to educating therapists as well as the public on ways to support parents contending with the additional challenges of ADHD.

As noted, the proposed RCT hypothesizes that participants with combined treatment will show significantly lower levels of inconsistent discipline and higher levels of involvement than pharmacotherapy-only participants at follow-up. These results would suggest that the empirically-supported benefits of combined treatment for ADHD include improvements in parental functioning. This finding would be consistent with the adult ADHD intervention literature, which has indicated that pharmacotherapy often helps reduce core symptoms of ADHD, but psychological intervention is necessary to promote longer lasting behavioral, emotional, and environmental changes that tend to improve overall functioning (e.g., Safren et al., 2005; Weiss et al., 2012).

It is also possible that improvements in inconsistent discipline and involvement will be observed for participants in the combined group, but not for participants in the pharmacotherapy group. These findings would support the notion that modifying behavioral strategies, environmental structure, maladaptive cognitions, and coping strategies are essential mechanisms of change to address parenting deficits. However, participants in the proposed study will be receiving a stable course of pharmacotherapy and it will not be possible to conclude if CBT-alone is equal to or superior to pharmacotherapy over the short or long term.

Even though the stability of participants' pharmacotherapy limits interpretation of causality for the pharmacotherapy group, a possible outcome of the study is generalized improvement in parenting across treatment conditions. Given prior research on the added benefits of adjunctive CBT, this outcome is inconsistent with the study's hypotheses and is less likely (Safren et al., 2005; Weiss et al., 2012). However, several theorists have postulated that attention, inhibitory control, and self-reinforcement systems, which are largely mediated by the dopaminergic pathway, are paramount to effective parenting practices, and influence discipline strategies and involvement (Johnston et al., 2012). This theory was partially supported in one empirical study, which displayed improved self-report of parental functioning following a trial of stimulant medication (Chronis-Tuscano et al., 2008b). Thus, it is possible that participants in the pharmacotherapy group will see an equal degree of improvement, which would suggest that CBT does not provide added benefit for parenting challenges.

As a final possibility, if both interventions are associated with significant symptom reduction, but there is no change in inconsistent discipline or involvement, this will raise the question if parental ADHD can be treated effectively with traditional intervention approaches. Such results would suggest that alternative parenting interventions (e.g., dyadic attachment based

therapy, coaching, home-based supports, family treatment) might be explored and could better address childrearing difficulties in adult ADHD.

Potential limitations of the RCT. The RCT described here proposes an ambitious, large-scale study involving complex research questions and a very specific subpopulation. Thus, a number of potential limitations of methodology and feasibility are anticipated, in addition to those encountered in the pilot study, which warrants discussion of expected challenges of this research. Additionally, an examination of these implications can help fuel ideas for future research that extend beyond the scope of the proposed study.

Possible confounds and methodological limitations. There are several factors that present potential validity threats in the proposed study. Certain factors, including the effect of the presence and severity of offspring ADHD symptomatology and possible gender differences in parenting difficulties may present as confounding variables. In addition, the wide age range of participants' children (six to eighteen) also presents an important methodological limitation.

A largely inevitable, but important confound is the influence of offspring ADHD on parenting behavior, as ADHD is a highly heritable neurodevelopmental disorder (e.g., Faraone & Biederman, 2005). Thus, it is anticipated that many participants will have at least one child with a formal ADHD diagnosis or ADHD symptomatology. Most biopsychosocial models of parenting posit that childrearing behavior is bidirectionally influenced; parenting styles influence offspring behavior and certain behaviors in children tend to elicit either adaptive or maladaptive parenting practices (e.g., Lengua & Kovacs, 2005). As such, the severity of offspring ADHD could certainly impact behavior in parental ADHD, increasing parents' vulnerability to inconsistent discipline and reduced involvement. This variable can be addressed through

follow-up studies in order to identify specific characteristics of non-responders to combined treatment.

As previously mentioned, ADHD-related parenting difficulties tend to manifest differently in mothers and fathers and it is possible that gender could moderate response to treatment of parenting difficulties (Arnold et al., 1997; Ellis & Nigg, 2009). Additional analyses, such as a two-way ANOVA in which follow-up scores of inconsistent discipline and involvement are set as dependent variables and gender is an added independent variable, can help determine the degree to which gender may moderate the effectiveness of combined treatment. However, an anticipated barrier will be recruiting men for the proposed study, as over 80% of pilot study participants were female. If this trend continues, it may be necessary for follow-up studies to target mothers and fathers separately to examine their responsiveness to treatment from a parenting perspective.

The proposed study aims to include parents with children of a variety of ages (6 to 18) in order to recruit the largest sample possible. The APQ was developed to inquire about parenting difficulties pertinent to children within these age ranges. However, the vast age range of the APQ raises questions about content validity, which is the rationale for not including parents with children aged three to five in the proposed study. Naturally, the demands of parenting are quite different for older children than younger children. However, given the lack of previous research on the effect of treatment of parenting difficulties in adult ADHD, the benefits of recruiting a larger sample appear to outweigh the risk of this potential validity threat. A possibility for future research beyond the proposed study would entail stratifying parents into different groups based on the ages of their children and comparing the effectiveness of combined treatment. These types of follow-up studies could begin to examine the degree to which interventions need to be tailored

to address the developmental challenges for parents of preschool, elementary-aged, and adolescent children.

Feasibility limitations. There are a number of potential barriers pertaining to the feasibility of the proposed RCT, some of which were encountered in the pilot study. Certain challenges appear germane to the symptomatology associated with the ADHD population, which will make the process of sample recruitment and retention somewhat difficult. These challenges will likely manifest differently in the proposed study than in the pilot study, given the significant difference in methodology. Nevertheless, attrition is anticipated due to difficulties with intrinsic motivation and delayed reinforcement associated with the diagnosis of ADHD. A number of potential participants may view the screening process, questionnaires, and commitment of the intervention as being too lengthy and effortful.

The diagnostic screening process, while paramount to maximizing internal validity, will make recruitment of a large sample more challenging. As previously discussed, inattention and hyperactivity are characteristic of certain mood disorders and anxiety disorders, as well as a multitude of medical conditions. A number of individuals may report inattentive symptoms and perhaps even receive treatment with stimulant medications, but will not meet full criteria for ADHD. Additionally, some adults with childhood histories of ADHD only meet partial criteria for the diagnosis upon reaching adulthood (Barkley et al., 2006). Consequently, many individuals who may receive pharmacotherapy for inattentive symptoms may be excluded from the study during the diagnostic screening process.

A final limitation to the feasibility of this project is the burden of time and resources on behalf of the investigators of this study. Such a large-scale study with a rigorous recruitment, screening, intervention, and follow-up process requires an entire research team with clinicians

trained to conduct the CBT intervention with fidelity. Moreover, in order to recruit a sufficient sample, this type of study needs an institutional affiliation, and may be best suited for an academic medical center that has a reputation of being a strong clinical research center. This type of setting would ideally have an ADHD or adult ADHD center responsive to research and allowing for direct collaboration between researchers and clinicians.

Conclusions

Over the past few decades, a breadth of research has led to increased knowledge of the symptom profile, functional challenges, and empirically supported interventions for adult ADHD. More recently, research has noted that specific parenting deficits, including problems with inconsistent discipline, involvement, and more equivocally, positive parenting, are common among parents with ADHD (e.g., Chronis-Tuscano et al., 2008a; Murray & Johnston, 2006). Despite these findings, few studies to date have investigated the degree to which the beneficial effects of adult ADHD interventions, including pharmacotherapy and CBT, generalize to parenting behavior.

This dissertation was developed to bridge the gap between the theoretical and empirical evidence of parenting difficulties in adult ADHD and to address the paucity of research evaluating the degree to which existing interventions can alleviate these challenges. The findings elicited in my pilot study include a significant association between parental ADHD and problems with involvement and a trend towards more inconsistent discipline. These data lend further support to the childrearing challenges faced by ADHD-parents and can be of utility in focusing interventions by clinicians working with parents and families. This study lays the groundwork for more rigorous and systematic intervention research for parental ADHD. It is my hope that a series of intervention trials will further help parental ADHD researchers and clinicians better

understand the relative benefits of existing interventions to find the best evidenced-based approaches that may help parents with ADHD become more consistent, involved, and effective in caring for their children.

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Appendix A

Informed Consent Document

Informed Consent: Doctoral Dissertation on Parenting Behavior
David Porrino, M.S., Doctoral Candidate
Antioch University New England

Invitation to participate in a study about parenting and ADHD:

My name is David Porrino, and I am a doctoral student in psychology at Antioch University New England. I am currently doing a study about parenting among adults with and without attention problems. Your involvement in this research could help us find out more about the challenges of parenting and allow researchers to learn more about the types of treatment that tend to be most helpful for parents with and without attention difficulties. I would be grateful for your help.

Your participation in this study is completely voluntary. If you do decide to participate, you will be asked to complete two brief questionnaires. I expect that the entire process will take between ten and fifteen minutes. **Any information you provide will remain private.** There is no way for me to know who gave which answers. If you want to be entered in a raffle for a \$50 Amazon Gift card, I will ask you for your name and e-mail address, but this information will be separate from your survey answers. Up to 150 people will be invited to enter the raffle. **You have the right to stop your participation at any time.** While I do hope that you answer as many questions as you feel comfortable, you do not have to answer any questions that you do not want to. If you leave questions blank or discontinue taking the survey, you can still enter the raffle.

I understand that it can be difficult to answer questions about parenting. Therefore, **if you have any questions about this project,** I would be happy to answer them. You may contact me, David Porrino, at (XXX) XXX-XXXX, or by email at xxxxxxxx@antioch.edu. You may also contact my faculty advisor, Dr. Martha Straus, at (603) 283-2187 (mstraus@antioch.edu). If you have any questions about your rights as a research participant, you may contact Donald Woodhouse, Chair of the Antioch University New England IRB, at (603) 283-2101 (dwoodhouse@antioch.edu), or Melinda Treadwell, Vice President for Academic Affairs, at 603-283-2444(mtreadwell@antioch.edu).

If you would like a copy of this form, I would be happy to make one for you.

Participant's Signature

Date

Appendix B
Demographics and Treatment Questionnaire

Demographics Questionnaire and Treatment Survey

Please answer all of the following questions to the best of your knowledge by checking the appropriate box(es) or filling in the blanks.

1) What is your age? _____

2) What is your gender?

- Male
- Female
- Prefer not to specify

3) Please indicate your ethnicity/race

- American Indian or Alaskan Native
- Hawaiian or other Pacific Islander
- African American or Black
- Hispanic or Latino/a
- Caucasian
- Other
- Prefer not to specify

4) Please indicate your current household income.

- Less than \$20,000
- \$20,000 - \$29,999
- \$30,000 - \$39,999
- \$40,000 - \$49,999
- \$50,000 - \$74,999
- \$75,000 - \$99,999
- \$100,000 - \$150,000
- \$151,000 - \$250,000
- Greater than \$250,000
- Prefer not to specify

5) What is your current marital status?

- Married
- Single, never married
- Single, divorced/separated
- Single, widowed
- Living with a significant other
- Prefer not to specify

6) Please answer the following questions about each of your children below:

Child #1

Age _____

Gender _____

Nature of parent-child relationship

Biological

Adoptive

Foster

Other

Does this child...

Have a formal ADHD/ADD diagnosis

Have suspected ADHD/ADD

Child #2

Age _____

Gender _____

Nature of parent-child relationship

Biological

Adoptive

Foster

Other

Does this child...

Have a formal ADHD/ADD diagnosis

Have suspected ADHD/ADD

Child #3

Age _____

Gender _____

Nature of parent-child relationship

Biological

Adoptive

Foster

Other

Does this child...

Have a formal ADHD/ADD diagnosis

Have suspected ADHD/ADD

Child #4

Age _____

Gender _____

Nature of parent-child relationship

Biological

Adoptive

Foster

Other

Does this child...

Have an ADHD/ADD diagnosis

Have suspected ADHD/ADD

Child #5

Age _____

Gender _____

Nature of parent-child relationship

Biological

Adoptive

Foster

Other

Does this child...

Have an ADHD/ADD diagnosis

Have suspected ADHD/ADD

Child #6

Age _____

Gender _____

Nature of parent-child relationship

Biological

Adoptive

Foster

Other

Does this child...

Have an ADHD/ADD diagnosis

Have suspected ADHD/ADD

7) Have you been diagnosed with ADHD, or are have you ever received treatment for ADHD symptoms?

Yes

No

8) Do you currently take medication for ADHD symptoms? (If no, please skip question #9)

Yes

No

9) Which of the following medications are you currently taking for your ADHD symptoms?

Adderall (Amphetamine Salts)

Ritalin (Methylphenidate)

Concerta (Methylphenidate)

Focalin (Dexmethylphenidate)

- Vyvanse (Lisdexamfetamine)
- Strattera (Atomoxetine)
- Wellbutrin (Bupropion)
- Intuniv (Guanfacine)
- Other: _____

10) Do you currently receive any type of therapy and/or coaching for ADHD symptoms? If yes, check all that apply. Please also specify the length of time that you have received each of these services.

- Individual Psychotherapy
- Family Therapy
- Group Therapy
- Cognitive Remediation
- Organizational/Executive Functioning Coaching
- Other: _____
- I do not receive any of these services

Appendix C

Alabama Parenting Questionnaire

Due to copyright, the Alabama Parenting Questionnaire cannot be republished without written permission but information about and permission to use the measure can be found at:

[https://cyfar.org/sites/default/files/PsychometricsFiles/Parenting%20Questionnaire-Alabama%20\(parents%20of%20children%206-18\)_0.pdf](https://cyfar.org/sites/default/files/PsychometricsFiles/Parenting%20Questionnaire-Alabama%20(parents%20of%20children%206-18)_0.pdf)

"No cost associated with the survey. Dr. Frick requests that copies of any publications using the APQ are sent to him at pfrick@uno.edu."

Appendix D

Pilot Study Debriefing

Debriefing Statement

Thank you for your participation in my dissertation research, which focused on comparing parenting behavior in adults with and without ADHD. In this study, I sought to obtain more information about the effects of ADHD treatment on the additional challenges that many adults with ADHD face as parents. The purpose of this study is to determine the extent to which currently available treatments (e.g., medication, cognitive training, and psychotherapy) are associated with fewer difficulties with parenting tasks. The data collected in this study can help parents with ADHD, and I strongly appreciate your involvement in this project.

David Porrino, M.S.
Doctoral Candidate in Clinical Psychology
Antioch University New England