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Parent Attributions of Preschool Children with ADHD: Associated Factors and Changes in Attributions After Behavior Parent Training

by

Hi Jae Jung

Presented to the Graduate and Research Committee

of Lehigh University

in Candidacy for the Degree of

Doctor of Philosophy

in

School Psychology

Lehigh University

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2026

Approved and recommended for acceptance as a dissertation in partial fulfillment of the requirements for the degree of Doctor of Philosophy in School Psychology.

_____
Date

_____
George DuPaul
Dissertation Chair
Professor of School Psychology
Associate Director, Center for Community-Driven Assistive Technologies
Lehigh University

_____
Accepted Date

Committee Members:

_____
Bridget Dever, Ph.D.
Professor of School Psychology
Associate Dean for Research, College of Education
Lehigh University

_____
Lee Kern, Ph.D.
Professor of Special Education
Director, Center for Promoting Research to Practice
Lehigh University

_____
Patricia Manz, Ph.D.
Professor of School Psychology
Chair, Dept. of Education and Human Services
Lehigh University

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Abstract

Parent attributions, or how parents perceive and interpret their children and their behaviors, are found to be linked with child externalizing behaviors and parenting practices. Negative parent attributions are associated with more child externalizing behaviors and greater use of harsh punishments instead of positive parenting strategies. Given that behavioral parent training (BPT) is the first line of treatment for preschool children with ADHD, understanding and addressing parent attributions of preschool children with ADHD may play a critical role in ADHD treatment. The current study examined the following research questions: 1) is there a difference in parent attributions between parents of preschoolers with and without ADHD?; 2) are there child and parent variables associated with parent attributions?; and 3) do parents receiving BPT with optimistic parenting report changes in parent attribution after treatment? Data from 249 caregivers (ADHD group = 181, typically developing group = 68) participating in a randomized controlled trial indicated that parents of preschoolers with ADHD reported significantly greater negative attributions compared to their typically developing counterparts. Child defiance/aggression and parenting stress were significantly associated with parent attribution scores, whereas child age, assigned sex, levels of inattention/hyperactivity, and parent ADHD status were not significantly linked to negative parent attributions of preschoolers with ADHD. In contrast to the hypothesis, enrollment in a 10-week BPT with optimistic parenting was not significantly associated with changes in parent negative attributions. Findings from the current paper suggest that negative parent attributions toward preschoolers with ADHD emerge early in their development and are linked with malleable factors such as child defiant/aggressive behaviors and parenting stress. These attributions may contribute to harsher parenting and undermine the effectiveness of BPT, highlighting the importance of assessing and targeting

parent attributions alongside child ADHD symptoms and parenting stress. Incorporating cognitive behavioral techniques to address negative parent attributions may improve BPT engagement, strategy use, and overall treatment outcomes for families with young children with ADHD.

Chapter 1: Introduction and Review of the Literature

Attention-deficit/hyperactivity disorder (ADHD) is one of the most common neurodevelopmental disorders among children and adolescents, with approximately one out of nine children and/or adolescents ever receiving a diagnosis in their lifetime (Bitsko et al., 2022; Danielson et al., 2024). Recent years have also seen a notable increase in ADHD prevalence trends among children and adolescents (Katz et al., 2026; Zablotsky et al., 2019). Youth with ADHD are characterized by difficulties sustaining attention, excessive motor activity, and difficulty regulating impulses. These behaviors are present across multiple settings and cause significant impairment in their academic, social, or personal functioning (American Psychiatric Association [APA], 2022). ADHD is often considered a school-age disorder as the peak age of onset is approximately ages 9 to 10, with 10% of children ages 6 to 11 and a little over 13% of adolescents ages 12 to 17 ever receiving a diagnosis (Bitsko et al., 2022; Solmi et al., 2022). Students with ADHD face challenges with inattention and hyperactivity-impulsivity that become more noticeable compared to typically developing peers in school settings where demands for sustained attention on tasks, instructions, and other higher-order executive functioning skills increase (Egger et al., 2006; Kofler et al., 2018).

ADHD in Preschool Children

Despite it typically being recognized as a school-age disorder, ADHD can be identified as early as preschool (Wolraich et al., 2019). According to the Mental Health Surveillance Among Children in the United States report (Bitsko et al., 2022), around 2% of children ages 3-5 have received a diagnosis of ADHD based on parent reports. Studies have also found that ADHD at 3 years old can reliably predict continued ADHD in children 5 to 6 years old (Bufferd et al., 2012; Harvey et al., 2009; Leblanc et al., 2008). Harvey et al. (2009) reported that more than 75% of

children who met the diagnostic criteria for ADHD Predominantly Hyperactive/Impulsive or Combined presentations at the age of 3 continued to meet the criteria 3 years later.

Similarly, Law et al. (2014) reported that approximately 70% of children under 7 years of age meeting the criteria for any presentation of ADHD continued to exhibit symptoms of ADHD after an average of 7 years. At a younger age, it is more common for preschool children to exhibit hyperactive-impulsive and combined presentations of ADHD, with the prevalence rate for inattentive presentation increasing and hyperactive-impulsive presentation decreasing as students attend formal schooling (Harvey et al., 2015; Leopold et al., 2019, Spira & Fischel, 2005). Even though ADHD symptom presentation may change over time, children who meet diagnostic criteria in preschool often continue to meet criteria through primary and secondary school (Lahey et al., 2005; Leopold et al., 2019).

Early diagnosis of ADHD in preschool can be predictive of difficulties in multiple areas of functioning for children. Behaviorally, there is relatively high comorbidity with oppositional defiant disorder (ODD) and conduct disorder (CD) symptoms in children with ADHD (Bendiksen et al., 2017; Danielson et al., 2024). Harvey et al. (2016) reported that preschool ADHD symptoms of hyperactivity and impulsivity are predictive of later ODD and CD symptoms such as argumentative and defiant behaviors. In a longitudinal study, preschoolers with ADHD were found to exhibit a higher likelihood than their non-ADHD counterparts of being involved in unsafe practices like being arrested, driving without a license or permit, riding motorcycles without a helmet, and unintentionally being injured as adolescents (Lahey et al., 2016).

Preschool ADHD not only manifests in challenging behavioral outcomes, but it also is predictive of emotional difficulties such as depression and anxiety (Ingeborgrud et al., 2023;

Overgaard et al., 2014). Research indicates that early childhood ADHD and anxiety often co-occur (Overgaard et al., 2016). Significantly higher percentages of preschool children with ADHD experienced anxiety or depression at the age of 8 compared to preschool children without ADHD (Ingeborgrud et al., 2023). Given the relatively high co-occurrence of anxiety in children with ADHD, Gair et al. (2021) explored pathways between the two diagnoses and reported that ADHD symptoms predicted anxiety symptoms the following year, but not the other way around. These pathways were statistically significant for both boys and girls, suggesting that regardless of assigned sex, symptoms of ADHD such as inattentiveness and hyperactivity/impulsivity can be associated with feelings of anxiousness and nervousness starting at a very young age. Lahey et al. (2016) discovered that individuals who were identified as having ADHD in preschool self-reported higher levels of anxiety during adolescence compared to their typically developing peers. These findings underscore the enduring impact of early ADHD symptoms on emotional well-being, particularly heightened vulnerability to anxiety across development.

Academically, preschoolers with ADHD often experience more challenges in school settings due to difficulties staying focused for long periods (Spira & Fischel, 2005). Teacher-rated ADHD behavior levels in preschool were inversely correlated to social-emotional, language, cognitive, literacy, and mathematics school readiness assessments (Dennis et al., 2021). Studies have found that symptoms of inattention, but not hyperactivity/impulsivity, were associated with lower academic achievement in reading, spelling, and math (Agapitou & Andreou, 2008; Lahey & Willcutt, 2010; Schmiedeler & Schneider, 2014). Using a nationally representative sample of young children, Claessens and Dowsett (2014) found that classroom attention problems in kindergarten predicted poorer growth in reading in the first 3 years of elementary school. Similarly, O'Neill et al. (2016) found that greater inattention in preschool

was associated with worse language development the following year, which mediated the relationship with lower reading achievement at 8 years old. These studies underscore the critical role of preschool inattention in association with poor reading skills as mediated by lower development of pre-reading skills such as alphabet knowledge and phonological awareness (Dittman, 2016).

Preschoolers exhibiting symptoms of ADHD also experience social difficulties such as peer rejection and bullying (Krasner et al., 2022; Stenseng et al., 2016). Young children with ADHD were more likely to be rated by their teachers to have poorer social skills and to be rejected or ignored compared to their peers without ADHD (Lee et al. 2008). Additionally, their symptoms in early childhood were predictive of peer rejection as first graders (Stenseng et al., 2016). Similarly, Verlinden et al. (2015) reported that ADHD symptoms at the age of 3 predicted bully or bully-victim statuses at age 7, and ADHD symptoms at age 5 predicted involvement as a bully or bully-victim at the age of 8, indicating that their behavioral difficulties are accompanied by significant challenges in peer relationships.

Preschool ADHD and Family Difficulties

ADHD symptoms and diagnosis in early childhood can predict long-term challenges in multiple domains of functioning (O'Neill et al., 2017), such as school or out-of-home behavior and performance, as well as significantly impacting family functioning (Breaux & Harvey, 2019). Families with young children with ADHD often report lower maternal warmth, higher parent conflict, and strains in their parent-child relationship. Raising a young child with greater attention problems was correlated with fewer positive discipline practices (e.g., supporting the child), more negative discipline practices (e.g., commands, physical interference), and lower maternal sensitivity towards their child's behaviors (Choenni et al., 2019). Using observations of

parent-child interactions, Breaux and Harvey (2019) found that child ADHD symptoms negatively predicted observed maternal warmth in the subsequent year for three consecutive assessment phases. Specifically, they found that mothers interacting with a child exhibiting significant ADHD symptoms elicited less praise and encouragement, as well as fewer observations of cheeriness and enthusiasm during parent-child interactions.

One of the most common impacts of raising a child with ADHD can be parents experiencing parenting stress and/or depression, especially for mothers, who are often the primary caregivers. Mothers who raise young children with ADHD, compared to mothers of children without ADHD, have been found to experience higher levels of stress regarding their children's behaviors as well as their own parenting competence (Theule et al., 2013; van der Veen-Mulders et al., 2017). Even when compared to parents raising children with other clinical difficulties that were not conduct disorders (e.g., learning disabilities, developmental delays, internalizing disorders), parents of children with ADHD reported significantly greater child-domain parenting stress. Regarding gender differences, Theule et al. (2013) noted that having a daughter significantly moderated the stress levels reported by parents, with lower stress levels in general than among parents of boys with ADHD.

Breaux and Harvey (2019) examined family functioning longitudinally and found that maternal depression and maternal life stress were both predicted by child ADHD symptoms. Additionally, these relationships were bidirectional, indicating an ongoing cycle of the child's ADHD affecting maternal stress and depression, which then negatively influences the child's behaviors. For fathers, child ADHD symptoms predicted subsequent paternal depression and life stress but not the other way around. Mothers, being the primary caregivers, reported significantly higher child externalizing behavior problems, parental depression, and parenting stress compared

to fathers of preschoolers with ADHD (van der Veen-Mulders et al., 2017); both mothers and fathers of preschoolers with ADHD also reported higher levels of stress compared to parents of a non-clinical sample.

In addition to parenting stress being elevated for parents of preschoolers with ADHD, DuPaul et al. (2001) reported that parents reported significantly lower estimates of their coping skills compared to families with typically developing preschoolers. Specifically, moderate between-group effect sizes were found for acquiring social support (e.g., sharing difficulties with relatives and friends) and large effect sizes for reframing their difficulties; reframing parenting difficulties as a coping strategy included empowerment of being able to problem-solve as well as adjusting their thoughts on challenging situations to more positive views. Positive reframing has subsequently been found to be associated with lower levels of maternal and paternal stress (Craig et al., 2020).

Parent Attributions for Children's Behavior

The array of behavior challenges presented by children with ADHD, along with family difficulties, underscores the importance of further investigating how parents view their children and their children's behaviors. The concept of parent attributions refers to how parents perceive and explain a child's behaviors (Miller, 1995). Although there are multiple approaches to understanding attributions, common dimensions include disposition/situation, intentionality, and permanence or stability (Heider, 1985, as cited by Malle, 2022). Disposition refers to traits, abilities, or other qualities that individuals hold, whereas situation explores environmental factors that may impact behaviors or events. If a child screams at their peers, dispositional attributions may assume that the child is bad or poorly behaved. Alternatively, situational attributions focus on external factors that could have influenced the behavior such as having a

bad day or reacting to ongoing bullying from peers. Intentionality refers to whether behaviors were intentional or unintentional, and permanence examines whether behaviors or events will persist across time or not. The current study focused on child-referent parent attributions for their children's problem behaviors. Specifically, the study defines negative parent attributions as the parent's perception that problem behaviors (e.g., impulsive behaviors) are intentional by the child, reflect internal negative qualities of the child, and are behaviors of the child that will persist throughout their development.[1]

Typically, parents who have more negative attributions and place blame on the child for negative events report higher levels of behavioral concerns (Colalillo et al., 2015; Nelson et al., 2013). Depending on their perceptions, parents may also respond differently to their children's behavior (Dix et al., 1989; Johnston & Ohan, 2005). For instance, parents with negative child-referent attributions may interpret their child's impulsive behavior (e.g., knocking down a glass of water) as intentional (i.e., deliberate attempts to bother parents) whereas parents possessing positive child-referent attributions may view the same behavior as unintentional. How parents attribute their child's behavior could change their disciplinary approaches. Subsequently, the selected disciplinary strategy would further influence future interactions with their child, as parent behaviors can significantly alter their children's behaviors (Park et al., 2018).

Park et al. (2018) conducted a study with both mothers and fathers reporting child-referent parent attributions after reading scenarios of negative behaviors (e.g., knocking toys on the floor after losing) and positive behaviors (e.g., children setting up the table without being prompted). Findings indicated that negative parent attributions, reporting their child's behaviors

[1] The current paper uses the words "parent attributions"; however, in existing literature, terms such as "parent cognitive errors" or "parent perceptions" also refer to the same concept wherein parents perceive or distort their children's behaviors in a more negative light. Any mention of parent attribution in the current study implies child-referent or child-responsible attributions unless otherwise stated in the passage.

as intentional, stable, and global, led to lax and harsh parenting by both parents. A mediation effect was found for harsh parenting, in that negative parent attributions were associated with harsh parenting, which was linked to greater child behavior problems. Similarly, lax parenting (i.e., poor monitoring, inconsistent discipline) mediated the relationship between negative parent attributions and behavior problems, but this was only observed in mothers. Contrastingly, attributing positive behaviors to positive traits and intentions about the child was directly associated with positive parenting practices for both parents; unfortunately, there was no statistically significant relationship between positive parenting practices and child behavior problems found in this study.

Parent Attributions for Children with Behavior Problems

Parents of children who exhibit behavior problems tend to report more negative attributions for their children's behaviors, placing the responsibility/fault of the behaviors on the child (Kil et al., 2021; Shapiro et al., 2013). Shapiro et al. (2013) compared parents who had experience with their child's setback (e.g., parent's perception of poor academic performance or behavior) and parents who did not report having said experience. Parents who reported that their child had ever behaved poorly in school also reported significantly higher rates of punishment and attributed their child's difficulties to attempts to seek negative attention in addition to the child's lack of effort. In a systematic review, Kil et al. (2021) analyzed parent attributions and found that parents of children exhibiting either elevated internalizing or externalizing concerns held more child-responsible attributions compared to parents of typically developing children.

Compared to parents of typically developing children, parents of children with ADHD reported inattentive/hyperactive and oppositional/defiant behaviors as internal characteristics of the child that are stable (Gerdes & Hoza, 2006; Johnston & Freeman, 1997). With this diagnosis,

parents were found to report both inattentive/hyperactive and oppositional behaviors as more uncontrollable; however, parents rated oppositional/defiant behaviors as more controllable compared to inattentive/hyperactive behaviors, leading to more negative and upsetting parent reactions to defiant behaviors (Chen et al., 2008; Danforth et al., 2016; Johnston & Patenaude, 1994).

In contrast to problem behaviors being understood as internal, uncontrollable, and stable, parents of children with ADHD view prosocial behaviors of their children as less intrinsic and less likely to be a persistent (Collett & Gimpel, 2004; Johnston & Freeman, 1997; Johnston et al., 2009). Longitudinally, maternal attributions of negative behaviors as being internal, stable, and global across multiple situations may be associated with ongoing disruptive behaviors in boys with ADHD (Johnston et al., 2009), thereby forming a challenging cycle in parenting children with ADHD which could yield negative parenting strategies or a lack of positive attempts in parenting (Benedetto & Ingrassia, 2013; Glatz et al., 2011). When parents hold negative attributions and view problem behaviors as uncontrollable, global, and stable, parents may feel powerless or view their children's behaviors as unresponsive to parenting. Among parents of children and adolescents with ADHD, feelings of powerlessness were linked to coldness-rejection towards their child as well as less parental warmth (Glatz et al., 2011).

Factors that Impact Parent's Attributions for Children's Behavior

In addition to ADHD symptoms, multiple other factors influence how parents perceive negative behaviors exhibited by their children. For example, several studies indicated that the child's age affects parent attribution regarding their child's behavior (Cote & Azar, 1997). Most studies examining children's age as a variable have reported that negative attributions were associated with older age. With older children, the consensus among parents is that child

behaviors are more intentional and controllable as they should be "old enough" to understand the consequences of negative behaviors (Miller, 1995). Problem behaviors of school-aged children, compared to those in preschool, were also more likely to be interpreted as representing internal qualities of the child rather than affected by external factors (Gretarsson & Gelfand, 1988). Among school-aged children with ADHD (i.e., ages 5 to 11), Johnston and Patenaude (1994) reported similar findings where age was found to be a significant covariate in mothers viewing child behaviors as controllable or internal, thus older children were thought as more responsible for their behaviors.

Although findings regarding problem behaviors and negative parent attributions were consistent for the impact of age, there are mixed conclusions on whether a child's assigned sex influences how parents perceive different behaviors (Miller, 1995). For boys, some studies found that misbehavior was viewed as stable and typical (Gretarsson & Gelfand, 1988; Endendijk et al., 2023). For example, Endendijk et al. (2023) reported that fathers viewed their preschool son's negative behaviors as intentional, and mothers viewed them as typical; both leading to negative discipline towards their children. Alternatively, Gretarsson and Gelfand (1988) found that parents of girls attributed all behaviors, whether positive or problematic, to the intrinsic qualities of their daughters, highlighting the role of intent rather than influences from external events.

Studies that specifically recruited parents of children with ADHD also have mixed conclusions on the role of child-assigned sex on parents' attribution of children's problem behaviors. In a Greek sample of parents with preschool children with ADHD, parents rated the problem behaviors of boys as intentional and attention-seeking significantly more frequently than girls, and parents rated the behaviors of girls as more attributable to biological causes out of their control (Maniadaki et al., 2005). Based on these attributions, it was noted that perceiving

problem behaviors as intentional was associated with implementing stricter parenting methods. In a different study with a wider age range (i.e., preschool to school age), child sex differences were not discovered; rather, mothers attributed inattentive and impulsive behaviors as stable and global for all children regardless of the child's age and assigned sex (Chen et al., 2008).

Parent-related variables, such as parenting stress levels, are also associated with how parents view and interpret their children's behaviors. Within a non-clinical sample, parents who experienced greater parenting-related stress were more likely to perceive ambiguous child behaviors (i.e., described as "clumsy" or "challenging but age-appropriate" behaviors in the study) in a negative light (Beckerman et al., 2018). Higher levels of stress reported by parents were also linked to a greater likelihood of believing that child misbehaviors are more stable and intentional (Ball Cooper et al., 2018). Both studies found that negative attributions partially mediated the relationship between parenting stress and the use of harsh, overreactive, and hostile parenting methods, indicating that parents who experience greater parenting stress were more likely to interpret their children's misbehaviors more negatively, consequently leading to punitive disciplinary actions.

Few studies have investigated both parenting stress and attributions in families of children with ADHD. Harrison and Sofronoff (2002) explored the relationship between parental stress and attributions. Their findings noted that parental cognitions, defined as the combination of parent attributions for their children and self (i.e., parent), accounted for more than 20% of parenting stress and maternal depression. However, when the variables were individually examined, only parent attribution of their self-controllability (i.e., parents having control over their children's behaviors) was a significant covariate, as opposed to parent beliefs about their children's intentionality and controllability of their problem behaviors. Harrison and Sofronoff

surmised that parents understanding that their child has a diagnosis of ADHD may lessen the connection between parenting stress and attribution, as blame is placed more on the disorder than the child (Corcoran et al., 2017).

Another underexplored parent factor that may significantly contribute to current understandings of parenting and treatment for children with ADHD is parental diagnosis of ADHD. Given the strong heritability of ADHD, it is likely that parents of children with ADHD also have the disorder themselves (Uchida et al., 2023). Several studies have investigated the similarity fit hypothesis for parents and children with ADHD wherein parents with ADHD may be less likely to blame their children for problem behaviors as they are more understanding of the disorder (Grimbos & Wiener, 2018; Johnston et al., 2018). Supporting the similarity fit hypotheses, Grimbos and Wiener identified a significant interaction effect in their study of parents and children with inattentive symptoms where higher levels of paternal inattention were associated with lower reported conflict frequency among adolescents with elevated inattentive symptoms compared to teenagers reporting lower levels of inattention. Johnston et al. similarly found that parents with lower levels of ADHD symptoms were less empathetic toward their child with ADHD, whereas parents reporting more ADHD symptoms showed similar empathy regardless of their child's ADHD diagnosis. In contrast, other findings suggest that parental ADHD symptoms may be associated with more parent cognitive errors (Grimbos & Wiener, 2018; Fabrikant-Abzug et al., 2023). In the same study, Grimbos and Wiener also found support for the similarity misfit hypothesis such that mothers with higher inattentive symptoms reported more frequent conflicts with their adolescent with elevated inattention. Given limited research, more investigation is needed to clarify whether parental ADHD impacts how parents perceive their children and how perceptions are linked to parenting behaviors.

The Role of Parents in Treatment of Child ADHD

As described previously, preliminary studies suggest that parents of children with ADHD often hold more negative attributions about their children and their misbehaviors relative to parents of typically developing children. These attributions are strongly associated with how parents interact with their children, making it crucial to understand factors linked with parent attributions in order to promote positive parenting skills. Specifically for young children with ADHD, positive parenting methods are important because behavioral parent training (BPT) or parent management training (PMT) are recommended as the most effective first-line treatment for this population by the American Academy of Pediatrics (AAP; Wolraich et al., 2019).

As the name suggests, BPT relies heavily on the parent's commitment to and participation in setting their children up for success. The AAP states that BPT "helps parents learn age-appropriate developmental expectations, behaviors that strengthen the parent-child relationship, and specific management skills for problem behaviors" (Wolraich et al., 2019, p. 8). Because treatment for this age group is dependent on parents and how they implement evidence-based skills and strategies, it is important to understand that how they view their children may impact their parenting behaviors and their ability to help their children.

Parent Attributions for Child Behavior and BPT

Parent attributions regarding child problem behaviors are critical to consider when understanding treatment for children. Morrissey-Kane and Prinz (1999) proposed a model that described how child-referent attributions, such as thinking that child behaviors are internal, controllable, and stable, can lead to negative parent affect like shame, anger, and hopelessness. Negative affect would subsequently lead to a pathway of decreased expectancy that their children's behavior will change, followed by lower parent engagement in treatment. Several

studies have reported that parent attributions about their children's behaviors were related to various aspects of treatment, such as treatment acceptability, participation, and outcomes for children with ADHD (Chacko et al., 2017; Sawrikar et al., 2018; Williford et al., 2009).

Depending on how child behaviors are perceived, parents may approach or accept treatment methods differently. For instance, Johnston et al. (2005) reported that fathers of children with ADHD who viewed their children's symptoms as internal and global were more likely to explore non-traditional interventions (e.g., diet/vitamin treatments). Also, Bazier et al. (2024) found that parents who believed that their children's behaviors were controllable were significantly more likely to seek medication as a treatment option. Bazier et al. also reported that when parents perceived their children's behaviors as stable across development, parents engaged in more informal help-seeking behaviors such as talking with family and friends or the use of non-traditional treatments.

With regards to engagement with BPT, there are variable findings. One study reported that parents with negative attributions about their children's behaviors were significantly more likely to never attend a single session of multi-week BPT, compared to other parents who began and then dropped out or completed the treatment (Chacko et al., 2017). Parents with negative attributions provided responses suggesting that their children's challenging behaviors were viewed as internal, global, and stable. Alternatively, Johnston et al. (2010) found that parents who reported their children's behavior to be internal, stable, global, and controllable were more likely to report higher treatment acceptability for BPT. However, it is noteworthy that parents in the latter study were only required to attend a single 1-hr BPT session. This research design was intended to motivate parents with negative cognitions regarding their children to participate in the treatment study and thus, may not accurately reflect typical BPT engagement.

The existing literature supports the association between parent attributions and cognitions and treatment outcomes for children with behavioral difficulties. Sawrikar et al. (2018) reported that higher levels of negative parent attributions regarding child behaviors were found to predict greater conduct problem severity post-treatment and at 3-month follow-up assessments. In a sample of parents of children with ADHD, predominantly inattentive presentation, Jiang et al. (2018) found that post-treatment negative parent attributions were correlated with discipline practices at approximately 6-month follow-up. Fleming et al. (2025) reported that mothers with more negative attributions of their children reported smaller improvements in their children's behavior problems compared to mothers holding more positive attributions of their children. Parents who endorsed more negative views of their children reported more inconsistent and harsh discipline methods, whereas positive attributions appeared to be associated with increased positive parenting practices following intervention. Kaiser et al. (2010) reported that improvements in parent's negative perceptions of their child were associated with more favorable treatment outcomes related to parenting.

Lack of Emphasis on Parent Attributions in BPT for Children with ADHD

Although parent attributions may play a pivotal role in shaping parenting behaviors, most evidence-based BPT for children with ADHD do not address attributions, as sessions focus primarily on parenting behavioral strategies (Hornstra et al., 2023). Nevertheless, BPT researchers have postulated that parent attributions may impact post-treatment parent and child outcomes (Sawrikar et al., 2018). Thus, there remains a significant need for additional support in BPT, beyond behavior management strategies, that specifically targets parent attributions and cognitions, to help parents adjust their perceptions of their children and their behaviors (Hoza et al., 2006).

Studies on BPT for parents of children with autism spectrum or developmental disorders have incorporated optimism training (positive family interventions [PFI]) to alleviate parenting stress and pessimism, which are barriers to at-home strategy implementation (Durand, 2021; Durand et al., 2013). Durand et al. (2009) developed the PFI approach based on Seligman's (1998) construct of learned optimism and its connection to resilient behaviors in children and adults. The PFI sessions are designed to use cognitive restructuring strategies (i.e., cognitive-behavioral therapy [CBT] techniques), such as disputing negative thoughts, distracting negative thinking, or substituting pessimistic thoughts with positive productive thoughts across eight sessions while parents complete BPT, to enhance and encourage strategy implementation. Compared to parents participating in BPT-only interventions, parents who received optimism training alongside their BPT reported significant improvements in the severity of their children's maladaptive behaviors (Durand et al., 2013). In another study, Mueller and Moskowitz (2020) found improvements in parent-reported child-responsible attributions, where two out of three mothers of children with autism spectrum disorder (ASD) receiving BPT with PFI put less blame on their children's problem behaviors.

Similarly, Novick et al. (2022) added CBT strategies, such as cognitive restructuring and understanding the connection between thoughts, feelings, and actions, to a BPT program for mothers of children with ADHD. Compared to BPT programs without the added CBT components, mothers who received the combined treatment were more likely to perceive positive behaviors of their children as being internal, stable, and global. This was a positive shift in parent perception because most existing studies reported that parents of children with ADHD perceive positive or prosocial child behaviors as external, unstable, and specific events. Novick et al. also found that parents' positive attributions for children's behaviors were subsequently associated

with more positive and less negative parenting skills. Although it was a single study for parents of children with ADHD, these findings underscore the potential benefits of providing BPT that include CBT skills to modify parent attributions of their children.

Limitations in Current Literature

Existing literature provides substantial evidence indicating that parental attributions are strongly associated with parenting strategies and child behaviors (Glatz et al., 2011; Park et al., 2018); however, there is a paucity of research regarding factors related to parent attributions, particularly for preschool-aged children with ADHD. Most studies comparing parent attributions of children with and without ADHD have used participant samples consisting of school-aged children or a mix of preschool and school-aged children (e.g., 5 to 13 years old). Given that the age of the child may be a critical factor associated with parent attributions of negative behaviors (Johnston & Patenaude, 1994; Miller, 1995), further investigation is needed to explore how parents perceive ADHD symptoms and related disruptive behaviors in a younger population. Moreover, prior studies examining parent attributions of children with ADHD often included relatively small samples or focused exclusively on males. ADHD symptoms present in different ways depending on the assigned sex of the child; therefore, it is important to examine the link between the assigned sex of a young child with ADHD and parental interpretations of their behaviors.

Likewise, there is a gap in understanding how parent factors such as parenting stress and parental ADHD symptoms are associated with parents' attributions for their children's behaviors. Although the relationship between parenting stress and parental attributions has been established for typically developing children, there is limited research on these variables among parents of young children with ADHD. Further investigation is warranted as this group is particularly at

risk for elevated parenting stress and more negative attributions for their child's behavior. Similarly, parents of children with ADHD are also more likely to have a diagnosis of ADHD themselves, yet limited research has examined whether parental ADHD is associated with parent attributions for children's ADHD behaviors. Considering the current mixed findings, it is important to explore the relationship between parental ADHD and parent attributions with a sample of preschool-aged children.

Additionally, despite the significance of parent attributions for parenting children with externalizing behaviors, more research is needed to determine whether parent attributions are malleable and can change with BPT interventions for parents of young children with ADHD. To date, few studies have investigated the effects of treatment on parent attributions and found that attributions can change following parent interventions (Jiang et al., 2018; Kaiser et al., 2010; Novick et al., 2022; Sawrikar et al., 2018). Importantly, only two of the studies included a control condition (i.e., no intervention) for comparison, and both (Jiang et al., 2018; Kaiser et al., 2010) were from the same intervention program (i.e., Child Life and Attention Skills [CLAS], Pfiffner et al., 2014). Moreover, these studies recruited samples with an older mean age. Because there is uniqueness to ADHD symptoms and the specific age group where early intervention is possible, additional research is needed to focus on young children with ADHD and examine whether BPT impacts parent attributions.

Purpose of the Study

The current study aimed to address several gaps in the literature regarding parent attributions for young children with ADHD. Additionally, this study examined how BPT with optimistic parent training may change parent attributions about their children's behaviors over the course of treatment. The three main research questions and hypotheses were as follows:

First, is there a difference in parent attributions for child behaviors between parents of preschool children with ADHD and parents of typically developing children without ADHD? It was hypothesized, that aligned with existing literature (Gerdes & Hoza, 2006; Johnston & Freeman, 1997), parents of young children with ADHD would report more negative attributions about their children than parents of typically developing young children at baseline. It was assumed that statistically significant group differences would remain after controlling for child sex, age, child race, child cognitive ability, and household income.

Second, are there child-related and parent-related variables that are associated with parent attributions of their children's behaviors among parents of young children with ADHD specifically? The current study examined child-related variables such as the child's assigned sex, child age, and levels of related ADHD symptoms, specifically inattention/hyperactivity and defiance/aggression, and parent-related variables such as parent stress and parental ADHD. It was hypothesized that older child age, greater parenting stress, and higher levels of reported child inattention/hyperactivity and defiance/aggression would explain significant variance in parent attributions reported before treatment participation as consistent with existing literature (Ball Cooper et al., 2018; Chen et al., 2008; Johnston & Patenaude, 1994). Parents of older children have been found to perceive their children's behaviors more negatively and as intentional, which also has been reported by parents experiencing higher levels of parenting stress and parents of children exhibiting high aggression. Inattentive/hyperactive symptoms have been found to be less likely to explain parent attributions when aggressive/defiant behaviors are present. Regarding child assigned sex, although there are mixed research findings, it was hypothesized that there would be differences in parent attributions between boys and girls, as was reported by Maniadaki et al. (2005), with parents of boys reporting more negative

attributions than parents of girls. As for parental ADHD, given the lack of consistency in findings for parental ADHD, exploratory analyses were conducted to identify potential associations that are specific to a sample of caregivers of young children with ADHD.

Finally, do parent attributions change over time as a function of BPT relative to parents in a wait-list control condition for parents of children with ADHD? Although research on the effect of BPT on parent attributions of their children's behaviors is limited, findings from preliminary studies indicate that improvements in parent attributions were reported by parents who participated in BPT (Sawrikar et al., 2018), and these effects were more pronounced when BPT was paired with CBT strategies (Novick et al., 2022). It was hypothesized that families participating in BPT with optimistic parenting strategies would demonstrate improvements in parent attributions relative to parents in a wait-list control condition. DuPaul et al. (2018) found improvements in treatment outcomes for both face-to-face and online BPT regardless of their format, therefore, differences as a function of treatment delivery are not anticipated, and the two BPT conditions were combined into one treatment condition for comparison with outcomes for the wait-list control condition.

Chapter 2: Method

Participants

The current study used data from a sample of 244 primary caregivers of children 3-5 years old. The analytic sample included participants who completed the parent attribution measure (PAM) at least once during their participation in the study (i.e., participants who completed the PAM at one or more data collection time points). Two subsamples included 176 primary caregivers of children with ADHD and 68 primary caregivers of typically developing children. For both ADHD and typically developing groups, most primary caregiver respondents were female (ADHD sample = 94.3%; typically developing sample = 98.5%). Demographic information for the sample is presented in Table 1.

Procedures

Recruitment and Eligibility

Participants consisted of eight cohorts of families recruited over the course of 3 years within northeastern Pennsylvania. Families were recruited through local childcare centers, preschools, partnering pediatricians, psychology clinicians, intermediate units, extracurricular organizations, and social media posts on group organization pages. Common eligibility criteria for both ADHD and typically developing samples for the current study included having a child between the ages of 36 and 71 months and being a primary caregiver who understands and speaks English. Exclusion criteria included having a diagnosis of autism spectrum disorder (ASD), pervasive developmental disorder, intellectual disability, neurological damage, or significant motor or physical impairments. Specific group eligibility criteria are explained below:

ADHD Sample. For the ADHD preschool sample, parents were required to endorse at least four ADHD symptoms in their child's behavior on a phone screen, report parent behavior

ratings scores greater than the 90th percentile on one or more Conners Early Childhood Rating Scale (Conners, 2009) subscales relevant to ADHD (i.e., inattention/hyperactivity, restless/impulsive), and report scores lower than 15 on the Social Communication Questionnaire (SCQ), indicating low probability of ASD (Rutter et al., 2003). In addition, children were required to meet Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5-TR; American Psychiatric Association, 2022) criteria based on the Barkley Semi-Structured Diagnostic Interview (Barkley & Murphy, 2006) for either ADHD inattentive presentation, hyperactive/impulsive presentation, or combined presentations based on graduate research assistant–administered clinical interview; score 75 or greater on the Differential Ability Scale which measured cognitive ability (Elliott, 2007); and score below 80 on the Children's Global Assessment Scale (Shaffer et al., 1983) based on graduate research assistant ratings.

Typically Developing Sample. For the typically developing preschool sample, the eligibility criteria included the endorsement of fewer than four ADHD symptoms on a phone screen; scores lower than the 90th percentile on all parent-reported Conners Early Childhood Rating Scale (Conners, 2009) subscales relevant to ADHD (i.e., inattention/hyperactivity, restless/impulsive); scores lower than 15 on the social communication questionnaire which indicate low probability of ASD (Rutter et al., 2003). In addition, children must not have met Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5-TR; American Psychiatric Association, 2022) criteria based on the Barkley Semi-Structured Diagnostic Interview (Barkley & Murphy, 2006) for ADHD, ODD, or CD, based on graduate research assistant–administered clinical interview; cognitive assessment scores 75 or greater on the Differential Ability Scale (Elliott, 2007); and scores above 80 on the Children's Global Assessment Scale (Shaffer et al., 1983) based on graduate research assistant ratings.

Randomization

Families of children in the ADHD group were randomized into treatment groups by the study's data specialist. Participants were randomized into either a face-to-face intervention group, an asynchronous online intervention group, or a waitlist control group (the latter received treatment after 12-month follow-up assessment). All families, regardless of group assignment, received monthly information letters on various topics (e.g., screen time) for 12 months.

Intervention

Intervention for the current study entailed 10 weekly sessions of behavioral parent training (BPT) using the Promoting Engagement with ADHD pre-Kindergartners (PEAK) program (DuPaul et al., 2018). Doctoral students in school psychology or special education led the evidence-based BPT sessions aimed at reducing hyperactive-impulsive and inattentive behaviors in children with ADHD. Participants learned about general behavior management strategies as well as intensive function-based strategies to address specific behaviors. Sessions consisted of psychoeducation, group discussions, activities, videos, and in-the-moment use of optimism strategies. Optimism training (Durand et al., 2018) consisting of cognitive-behavioral intervention components (e.g., cognitive restructuring) was also embedded in the sessions. Optimistic parenting strategies were taught through dyadic lessons, prompting reflection, providing examples, assisting families in cognitive restructuring techniques, validating emotions, and encouraging parents to share home-based scenarios with one another. Brief optimism training reflections were interspersed throughout the sessions with more focused training added to the end of each session. Table 2 provides an overview of the intervention by each week.

Parents were asked to maintain a journal between sessions. Journal entries documented challenging or successful situations at home, accompanying beliefs or negative cognitions about

parenting efficacy or behavior permanency (e.g. “My family is not capable of having a nice dinner together”), outcomes of the situation, and lists of possible ways to dispute or substitute a negative thought. Journal entries were shared voluntarily by participants during the in-person or phone sessions.

The interventionists scheduled weekly phone calls with the families to address any questions about the previous session, whether the families had enough information to implement the behavior management strategies with their child and review the sessions optimistic parenting techniques. Feedback was provided by the interventionist.

Face-to-Face Intervention Group. Participants assigned to the face-to-face condition received 10 consecutive weekly in-person sessions. Participants also completed weekly phone calls (i.e., 15-30 mins) with their interventionist to discuss strategy use after each session for sessions two through nine. In-person sessions were held at a university that was local and accessible to most families. For families who could not attend for accessibility or illness reasons (e.g., COVID-19), a synchronous Zoom link was provided. Food and onsite childcare (provided by undergraduate or graduate students with previous experience working with children with disruptive behaviors) were provided to all families. If families were uncomfortable bringing their children to the onsite provided childcare due to the COVID-19 pandemic, parents were compensated for babysitters that provided childcare at home. In the event of weather interference or national holidays, sessions were rescheduled for the following available week. In addition to the weekly sessions, interventionists met separately with the intervention research team to discuss participant progress throughout treatment.

Online Intervention Group. Participants in the asynchronous online condition received 10 consecutive weekly online sessions via Canvas that were identical in content to face-to-face

treatment. Canvas is a user-friendly learning management system that allows the presentation of course materials in multiple forms, such as video, Word documents, and quizzes. Two weeks before the start date of the online sessions, a Canvas navigation tutorial video was emailed to participants to help them become familiar with Canvas. Research assistants then checked with each participant to ensure participants knew how to use Canvas. Each week a self-paced online session was released, and participants could move through the session in their own time. Completing a session took approximately 75 to 90 min. Participants had up to 14 weeks to complete all sessions. The online group followed the same procedure as the face-to-face group, with weekly interventionist phone calls following sessions two through nine.

Waitlist Control Group. Participants assigned to the waitlist control group received support in the form of monthly information newsletters during the first 12 months and access to the online parent education program after 12 months. The current study only used data prior to their access to intervention, as this group functioned as a control group.

Measures

Eligibility Measures

Conners Early Childhood Rating Scale – Early Childhood (Conners EC; Conners, 2009). The Conners EC parent form (Conners EC-P) assesses parents' perceptions of their child's behavioral, developmental, social, and emotional functioning. The Conners EC-P comprises 191 items, including two domains: Behavior and Developmental Milestones. The Behavior domain yields 11 subscales (e.g., Inattention/Hyperactivity, Defiance/Aggression, Social Functioning/Atypical Behaviors) and three Global Index (GI) Scales (i.e., GI Emotional Lability, GI Restless-Impulsive, GI Total) that consist of 4-point Likert scale items ranging from 0 (*not true at all)* to 3 (*very much true*). The Developmental Milestones domain yields five

subscales (e.g., Communication, Adaptive Skills) that consist of 3-point Likert scale items ranging from 0 (*no*) to 2 (*yes*). Parents also rate their child's experience of impairment in home life, peer interactions, and learning/pre-academic settings on a 4-point Likert scale ranging from 0 (*not true at all)* to 3 (*very much true*). The Conners EC-P has demonstrated acceptable to strong internal consistency (.86 to .93), test-retest reliability (.87 to.95), and criterion-related validity (Conners, 2009). The Conners EC-P was administered during the eligibility phase and all other assessment phases. For the eligibility phase, scores above the 90th percentile (*T*-scores of 63 or above) on either the Inattention/Hyperactivity or Restless-Impulsive scales were required for the ADHD sample, and scores below the identical cut-off were required for the typically developing sample.

Social Communication Questionnaire (SCQ; Rutter et al., 2003). The SCQ is a caregiver-report screening tool that measures the presence of abnormal communication skills and social functioning associated with autism spectrum disorders (ASD). The SCQ consists of 40 yes/no items which are derived from the Autism Diagnostic Interview-Revised (ADI-R; Lord et al., 1994). For children ages 3 to 5, the SCQ has a sensitivity of 69% and specificity of 81% in identifying those who are at risk for ASD (Allen et al., 2007). For both ADHD and typically developing groups, children who received an established cut-off score of 15 or higher on the SCQ were excluded from the study.

Barkley Semi-Structured Diagnostic Interview (Barkley & Murphy, 2006). The Barkley Semi-Structured Diagnostic Interview was administered to determine whether participants met the diagnostic criteria for ADHD and to assess for the presence of oppositional defiant disorder (ODD) and conduct disorder (CD). The interview consists of 59 items adapted from the DSM-5-TR (American Psychiatric Association, 2022) criteria. For the ADHD group,

caregivers must endorse at least six inattentive and/or six hyperactive-impulsive symptoms, which have lasted for at least the past 6 months, exhibited in at least two settings (e.g., home and school), and caused symptom-related social and/or academic impairment. Alternatively, for the typically developing group, caregivers must not have endorsed diagnostic criteria for ADHD, ODD, or CD.

Differential Abilities Scale-Second Edition (DAS-II). The Differential Ability Scales (2nd ed., DAS–II) (Elliott., 2007). The Differential Ability Scale, Second Edition (DAS- II) is an assessment of cognitive ability used for identifying strengths and weaknesses in cognitive functioning in children and adolescents between the ages of 2 years 6 months, and 17 years and 11 months (Elliott, 2007). The DAS-II is partitioned into two batteries appropriate for preschool-age children (i.e. Early Years) or school-age children (i.e. School-Age). The current study only utilized the Early Years battery which was further divided into lower levels (i.e., for ages 2:6-3:5) and upper levels (i.e., for ages 3:6-6:11). A General Conceptual Ability (GCA) score that represents overall cognitive ability is calculated by summing all core subscale scores. The six core subtests include Verbal Comprehension, Picture Similarities, Naming Vocabulary, Pattern Construction, Matrices, and Copying for children in the upper level. Children who were administered the lower-level assessment were given four core subtests of Verbal Comprehension, Picture Similarities, Naming Vocabulary, and Pattern Construction. Using an item response theory (IRT) based reliability system, the GCA composite was found to have strong internal reliability coefficients (from .94 to .96 based on IRT) for children ages 3:0 to 5:11. Additionally, the DAS-II GCA composite holds strong correlations with the Wechsler Intelligence Assessments (r = .84 - .87) (Elliott, 2007). Children with GCAs at or above 75 were considered eligible for the study.

The Children's Global Assessment Scale (CGAS; Shaffer, 1983). The CGAS is an assessment of social and psychological functioning in children between the ages of 4 and 16 years old (Shaffer et al., 1983). Within the scale, vignettes of varying levels of children's psychological and social functioning are proposed and the clinician makes a judgment on the child's function based on descriptions in the vignette (Shaffer et al., 1983). The scale ranges from 1 to 100, with lower scores indicating less favorable psychological functioning and higher scores indicating more favorable psychological functioning. Psychometric properties are sound with high levels of interrater reliability and validity (Shaffer et al., 1983). This measure was used to gauge the emotional and/or behavioral functioning of children. Participants in the ADHD group required CGAS scores lower than 80, indicating some form of impairment in emotional or behavioral functioning, whereas participants in the typically developing group required CGAS scores above 80, indicating good functioning across multiple settings.

Primary Measures

Parental Attribution Measure (PAM; Sawrikar et al., 2019). The PAM (Sawrikar et al., 2019) is a 12-item measure examining negative parent attributions for their child's problem behaviors. The measure generates a total score and three subscales of intentionality, permanence, and disposition using a 3-point Likert scale ranging from 0 (*not at all true*) to 2 (*certainly true*). Caregivers are provided with the following prompt: "All parents report having negative thoughts about their children, especially when they have behavior problems. This questionnaire is tapping into your darkest thoughts about your child, so please be as honest as you can when answering the questions." Sample items include "My child 'pushes my buttons' on purpose", "It is difficult to like who my child is", and "My child's problems are likely to continue throughout their life". Three items that are worded positively (e.g., "My child doesn't mean to do the wrong thing") are

reverse-coded. Total scores were computed through the sum of all 12 items with values ranging from 0 to 24, where higher scores indicate greater negative parent perceptions of their children's behaviors. The PAM total score was the main outcome measure for the current study and was collected at pre-, mid-, and post-treatment assessment phases for the ADHD group. For the typically developing group, only pre-treatment PAM total scores were included in the present analyses.

Sawrikar et al. (2019) examined the psychometric properties of PAM in a clinical sample of children ages 3 to 16 who were referred for treatment due to conduct concerns. The study reported good to acceptable internal consistency for both mother and father respondents on the total scale (α mothers = .82, α fathers = .80), intentionality factor (α mothers = .71, α fathers = .64), permanence factor (α mothers = .70, α fathers = .71), and disposition factor (α mothers = .70, α fathers = .66). Test-retest reliability was high for the total scale (r = .75) (Sawrikar et al., 2019). Specific to the current study's sample, Cronbach alpha for the total PAM scale in the ADHD group ranged from acceptable to good (α pre-treatment = .80, α mid-treatment = .79, (α post-treatment = .82). In contrast, the internal consistency for the non-ADHD group respondents on the total scale fell below conventional acceptability thresholds (α = .54) which may reflect limited evidence supporting the measure's use in a typically developing sample of young children.

Child Assigned Sex. Parents/caregivers reported their children's assigned sex at birth during their eligibility stage. Males were coded as 0, and females were coded as 1.

Child Age. Child age was calculated in months by subtracting their date of birth from their pre-treatment assessment completion date. The age of the child during pre-treatment was used for analyses in relation to research question 2.

Conners Early Childhood Rating Scale – Early Childhood (Conners EC-P; Conners, 2009). To measure ADHD symptoms and other disruptive behaviors, the current study used *T*-scores of the Inattention/Hyperactivity and Defiance/Aggression behavior scales from the Conners EC-P to address the second research question. *T*-scores were used as continuous variables with higher scores indicating greater problems regarding the behavior. *T*-scores of 40 and below fall within the low concern range, 40-59 fall within the average range, 60-64 fall within the slightly elevated concern range, 65-69 fall within the elevated range, and 70 and above fall within the very elevated range (Conners, 2009).

The Adult ADHD Self-Report Scale (ASRS; Kessler et al., 2005). The ASRS is an 18-item screening measure that was used to assess symptoms of ADHD in parents/caregivers. Participants are asked to rate how much they agree with several statements on a 5-point scale with 0 = *never*, 1 = *rarely*, 2 = *sometimes*, 3 = *often*, and 4 = *very often*. The ASRS is divided into two parts; part A includes 6 items and is used to determine ADHD status, and part B includes 12 items that further provide information about symptom severity and functional impairment. Adults who endorse four or more symptoms in Part A were found to have similar presentations as adults with an ADHD diagnosis (Adler et al., 2006; Kessler et al., 2007). The current study created a dichotomous variable for parental/caregiver ADHD status (0 = *not present*, 1 = *present*) by using the first 6 items (i.e., part A). This measure was only administered at pre-treatment.

Parenting Stress Index, Fourth Edition, Short Form (PSI-4-SF; Abidin, 2012). The PSI-4 Short Form consists of 36 items used to measure parent-child interactions linked with parenting stress. The PSI-4-SF uses a 5-point Likert scale (1 = *strongly agree*, 2 = *agree*, 3 = *not sure*, 4 = *disagree*, and 5 = *strongly disagree*). Each item is reverse-scored, and scores are then

summed to obtain a total score. In addition to a total score, the PSI-4-SF generates subscales of Difficult Child (DC), Parent-Child Dysfunctional Interaction (PCDI), and Parental Distress (PD). High scores indicate greater levels of parenting stress. The internal consistency estimates range from adequate to strong for the PD subscale (α = .71-.81), PCDI subscale (α = .83-.89), DC subscale (α = 81-.94), and for the total score (α = .88-.92) (Aracena et al., 2016; Barroso et al., 2016). The current study used the total PSI-4-SF raw score measured at pre-treatment.

Treatment Time. Each assessment phase (i.e., pre-, mid-, and post-treatment) was coded in weeks (i.e., continuous variable) to increase precision and flexibility of line-fitting in the context of hierarchical linear modeling (HLM). Pre-treatment functioned as a baseline phase and was coded as 0 weeks. All other assessment times were centered around their pre-treatment data by subtracting the weeks from each participant's pre-treatment assessment completion date. For families who did not complete their pre-treatment assessment, an estimated pre-treatment date was assigned using the midpoint of the pre-treatment assessment phase. This approach should enhance the interpretability of HLM model outcomes.

Covariates

Differential Abilities Scale-Second Edition (DAS-II; Elliot., 2007). To control for cognitive ability, the General Conceptual Ability (GCA) score was used. Higher scores indicate greater cognitive abilities.

Child race/ethnicity. Primary caregivers reported their child's race and ethnicity at pre-treatment. Caregivers reported their child's race as White, Black or African American, Asian, Native American/Alaskan Native, Native Hawaiian or Other Pacific Islander, or Other. For ethnicity, parents were asked to indicate whether they identified as Hispanic or non-Hispanic.

Given the limited sample size for some racial groups, race/ethnicity was recoded into White, non-Hispanic (=0), and other race/ethnicity (=1).

Socioeconomic status. Socioeconomic status (SES) was coded using the Hollingshead (1975) Index. The Hollingshead Index computes parent occupation and education into a single variable, based on a scale developed by Hollingshead (1975) which assigns scores to occupations and levels of education. Parents reported their occupation at pre-treatment within the following categories: higher executive, proprietor of large business and major professional (=9); administrator, lessor professional, proprietor of medium-sized business (=8); small business owner, farm owner, manager, minor professional (=7); technician, semi-professional, small business owner (=6); clerical and sales worker, very small farm and business owner (=5); smallest business owner, skilled manual laborer, craftsman, tenant farmer (=4); machine operator or semiskilled worker (=3); unskilled worker (=2); farm laborer/ menial service worker, dependent upon welfare--no regular occupation (=1); never worked in paid employment, student, housewife, disabled, retired, unemployed, other, sheltered workshop (=0). Parents also reported their education level within the following categories: completed post-graduate training (=7); completed college, received a four-year degree (=6); attended college, but did not receive a four-year degree (=5); completed high school or trade school or other non-academic training requiring high school completion for admission (=4); partial high school (10th or 11th grade) (=3); junior high school (7th, 8th, or 9th grade) (=2); less than 7th grade (=1). Occupation scores have a factor weight of 5, and education scores have a factor weight of 3; these are combined into a total score. For dual-income households, the sum of both caregiver's Hollingshead Index score is averaged. The Hollingshead Index ranges from 8 to 66, with higher scores suggesting higher SES.

Data Collection

Assessments and Data Collection

Data for the ADHD group were collected by primary caregivers at three points: before treatment randomization and delivery (i.e., pre-treatment), halfway through the treatment (i.e., mid-treatment, between week 4 to week 6 of treatment sessions), and after completion of 10 weekly treatment sessions (i.e., post-treatment). Participants in the typically developing group did not receive BPT intervention but were involved in data collection at times that were equivalent to pre- and post-treatment periods for the ADHD group. Only pre-treatment data for the typically developing group are used for the current study. Participants who met eligibility criteria for either group provided informed written consent and received survey measures through a secure web application called REDCap. Completed measures that required scoring (i.e., Conners) were scored by doctoral-level graduate students in school psychology or special education and 30% of randomly selected responses were double-scored to check for accuracy. One parent designated themselves as the primary caregiver and completed all self-reported measures as well as measures about their child. After completing all survey measures, participants were compensated either via gift card or check based on indicated preference.

Data Analysis

Preliminary Analysis

Prior to the main analyses, assumptions, data cleaning, dummy coding, and centering values was completed through SPSS version 31 (IBM Corp, 2025). Internal consistency coefficients of variables (e.g., PAM) specific to the current sample were also calculated separately for the ADHD and typically developing groups. Descriptive analyses, correlations, and ANOVA between the two sample groups were conducted to identify covariates significantly

associated with the main variables. This process was completed to help ensure the model remains parsimonious.

Additionally, before the HLM main analyses for research question 3, ANOVA was completed to confirm that there were no between-group differences in PAM pre-, mid-, or post-treatment for face-to-face and online BPT; this step was completed using SPSS version 31 (IBM Corp, 2025). Preliminary analyses confirmed the absence of outcome differences between face-to-face and online groups, therefore, the two treatment groups were combined into one BPT group, which was dummy-coded (0 = *waitlist control [WLC]*, 1 = *BPT*). Descriptions of each treatment condition are further elaborated in the procedures section, and statistical analyses are further described in the Results section.

Research Question 1

For the first research question, an analysis of covariance (ANCOVA) was completed to compare the ADHD and typically developing groups (i.e., independent variable) regarding parent attribution total score at pre-treatment after controlling for covariates (e.g., cognitive ability, race/ethnicity, SES) identified as statistically significant in the preliminary analyses. To determine sufficient sample size for the ANCOVA analysis, an a priori analysis for ANCOVA on G*Power 3.1 (Faul et al., 2009) was conducted. Parameters included an alpha of .05, a power of .80, and a medium effect size (f= 0.25) for a two-group comparison. The total sample size calculated by G*Power was 128, which was exceeded by the existing sample size. Assumptions of normality and homogeneity of variables were tested before the main analysis on SPSS version 31 (IBM Corp, 2025). Missing data were handled using listwise deletion. Effect size for the ANCOVA analysis was reported in η^2, where values of η^2 less than 0.01 are considered

negligible, values between 0.01 and 0.06 indicate small effects, values between 0.06 and 0.14 indicate medium effects, and 0.14 and over are considered large effects (Cohen, 1988).

Research Questions 2 and 3

Research questions 2 and 3 were answered through hierarchical linear modeling (HLM) using the software HLM 8 (Raudenbush & Congdon, 2021). Prior to conducting the analyses, assumptions of linearity, normality, and homoscedasticity were tested for level 2 variables. To address both cross-sectional and longitudinal research questions, the level 1 predictor was the time of intervention in weeks, and the level 2 predictors were participant-level variables. All missing values were recoded as system missing in SPSS before HLM analyses. Missing values in HLM were handled using restricted maximum likelihood (REML) estimation. For level 1 data, missing values were assumed to be missing at random (MAR), allowing all available observations to be included in the analyses. For level 2 data, participants with missing predictor variables were excluded from analyses that included those variables.

To answer the second research question, HLM was used to observe whether child and parent variables predict total parent attribution scores at pre-treatment. HLM data analysis plan is shown in Table 3. Before running the model, a fully unconditional model analysis was completed to determine whether there was a statistically significant proportion of variance in parent attributions across participants; for all analyses, χ^2 tests were used to examine variance for each model and determine whether there is significant variance in the model to add variables. Next, level 2 variables of child assigned sex, child age, inattention/hyperactivity, defiance/aggression, parenting stress, and parental ADHD were added as predictors of the intercept, while controlling for covariates identified at preliminary analyses (e.g., child cognitive ability, race, and household income). Random effects on intercepts and slopes were added to the model.

Subsequently, for research question 3, HLM was used to ascertain longitudinal parent attribution score change between treatment groups. Treatment time in weeks was centered around pre-treatment assessment dates. Time in weeks was the level 1 variable, and treatment condition (BPT vs. WLC) was the level 2 variable added to the previous model as a predictor of the intercept and slope.

The visual representation of research questions 2 and 3 is presented in Figure 1, and the expected equations for the final model are the following:

Level-1 Model

$$PAM_{ti} = \pi_{0i} + \pi_{1i}*(WEEKS)_{ti} + e_{ti}$$

Level-2 Model

$$\pi_{0i} = \beta_{00} + \beta_{01}*(\text{COG}_i) + \beta_{02}*(\text{RACE}_i) + \beta_{03}*(\text{INCOME}_i) + \beta_{04}*(\text{AGE}_i) + \beta_{05}*(\text{SEX}_i) + \beta_{06}*(\text{INHY}_i) + \beta_{07}*(\text{DEAG}_i) + \beta_{08}*(\text{PSI}_i) + \beta_{09}*(\text{PADHD}_i) + \beta_{010}*(\text{GROUP}_i) + r_{0i}$$

$$\pi_{1i} = \beta_{10} + \beta_{11}*(\text{GROUP}_i) + r_{1i}$$

Mixed Model

$$PAM_{ti} = \beta_{00} + \beta_{01}*\text{COG}_i + \beta_{02}*\text{RACE}_i + \beta_{03}*\text{INCOME}_i + \beta_{04}*\text{AGE}_i + \beta_{05}*\text{SEX}_i + \beta_{06}*\text{INHY}_i + \beta_{07}*\text{DEAG}_i + \beta_{08}*\text{PSI}_i + \beta_{09}*\text{PADHD}_i + \beta_{010}*\text{GROUP}_i + \beta_{10*}*WEEKS_{ti} + \beta_{11}*\text{GROUP}_i*WEEKS_{ti} + r_{0i} + r_{1i}*WEEKS_{ti} + e_{ti}$$

Chapter 3: Results

Descriptives and Correlations

Baseline descriptives of main variables are summarized in Table 4. In the ADHD group, 67.0% of the sample were assigned male at birth, their mean age was 54.20 months (*SD*=8.96) at baseline, and 64.8% of children were identified as White non-Hispanic. Children in this group had a mean general conceptual ability score of 103.05 (*SD*=12.88), which falls within the average range. Parents reported mean inattention/hyperactivity scores (*M*=79.14, *SD*=9.58) and defiance/aggression scores (*M*=71.12, *SD*=14.31) that were both indicative of very elevated levels of concern regarding their children's behaviors (i.e., *T*-scores above 70). Parents of children with ADHD reported a mean parenting stress score of 96.12 (*SD*=22.08) that corresponds to the 74th percentile, and a mean negative parent attribution score of 5.92 (*SD*=3.65). Additionally, 22.6% of parents reported experiencing ADHD symptoms and severity of these symptoms equivalent to an adult diagnosed with ADHD.

In the non-ADHD group, 52.9% of children were assigned male at birth, their mean age was 51.82 months (*SD*=8.07), 77.9% of the sample identified as White non-Hispanic, and their mean general conceptual ability score was 111.19 (*SD*=12.21), which falls within the above average range. There were significantly fewer children assigned male at birth in the non-ADHD group ($\chi^2[1] = 4.19$, $p=.041$), and they had higher cognitive ability scores ($t[225] = 4.43$, $p<.001$) than the ADHD group. Families in the non-ADHD group reported significantly higher scores of socioeconomic statuses compared to the ADHD group ($t[241] = 2.05$, $p=.041$). Parents reported significantly lower inattention/hyperactivity scores (*M*=46.45, *SD*=7.01), $t(165.19) = -28.87$, $p<.001$, and defiance/aggression scores (*M*=49.34, *SD*=8.10), $t(206.23) = -14.67$, $p<.001$, that both reflected average levels of concern regarding their child's behaviors. Parents reported a

mean parenting stress score of 61.53 (*SD*=15.78), which falls in the 28th percentile, and a mean negative parent attribution score of 1.84 (*SD*=1.78). In the non-ADHD sample, 13.4% of parents reported ADHD symptoms and severity of their symptoms that are equivalent to someone with ADHD.

Bivariate correlations (Pearson and point-biserial, as appropriate) for main variables (see Table 5) indicated that negative parent attribution scores were significantly positively correlated with ADHD group status (r_{pb}=.50, p<.001), inattention/hyperactivity scores (r=.55, p<.001), defiance/aggression scores (r=.69, p<.001), parenting stress scores (r=.71, p<.001), and parent ADHD status (r_{pb}=.19, p=.004). These results suggest that more negative parent attributions were associated with having a child with ADHD, higher scores on child inattention/hyperactivity, higher scores on child defiance/aggression, higher parenting stress scores, and parent ADHD status. No child demographic variable (i.e., age, sex, race/ethnicity, cognitive ability, SES) was significantly correlated with parent attribution scores.

Group Differences in Parent Attributions

To test negative parent attribution differences based on ADHD status, ANCOVA was considered given significant group differences in covariates (e.g., cognitive ability, sex, race/ethnicity, socioeconomic status indicators). Prior to conducting ANCOVA, assumptions of linearity were tested to discern whether there was a linear relationship between the covariates and the dependent variable. The assumption of linearity between covariates and the dependent variable was assessed via scatterplots and was found to be non-significant (i.e., no linear relationship), suggesting that ANOVA was more appropriate for addressing the first research question.

Assumptions of normality and homogeneity of variance were tested for the ANOVA. For the test of normality, a visual inspection of the *Q–Q* plot and histogram indicated that the residuals were approximately normally distributed. Although the Shapiro-Wilk test was violated (W=949, p<.001), ANOVA is robust to normality violations given the large sample size of the current study (i.e., sample size greater than 30; Pallant, 2007). When examining each group's skewness and kurtosis, the non-ADHD group showed a leptokurtic distribution with a total excess kurtosis of 3.12. Such result is consistent with an expected floor effect of the group characteristic, as many parents in the non-ADHD group reported very low levels of negative parent attribution. Given that this outcome was expected, it is unlikely to impact the validity of the analysis. To test homogeneity of variance, Levene's test of equality was used. Levene's test of equality of variances was significant, $F(1, 232) = 33.671$, p<.001, indicating that the assumption of homogeneity of variances was violated. To account for this violation, a Welch's ANOVA was conducted. The Welch test indicated a significant difference between groups, $F(1, 225.077) = 130.828$, p<.001.

As shown in Table 6, baseline parent attribution scores for parents of children with ADHD (M=5.92; SD = 3.65) were significantly higher than parents of children without ADHD (M=1.84; SD = 1.78), indicating greater negative attributions of children with ADHD by their parents. Eta squared (η^2) was calculated to measure group effect size. Eta squared was η^2=.25, indicating that 25% of total variance in parent attribution measures was associated with being in the ADHD group. Based on existing literature and guidelines (Cohen, 1969, as cited by Richardson, 2011), this is considered a large effect size.

Results from Hierarchical Linear Modeling

Child and Parent Variables Associated with Parent Attribution of Children's Behaviors

To address the second research question, which focused on identifying child and parent variables associated to parent attribution scores, hierarchical linear modeling was conducted on the ADHD group. As shown in Table 7, in the first model (i.e., the fully unconditional model), the χ^2 test associated with r_0 was significant ($\chi^2[176] = 1403.07$, $p<.001$), which indicated that there is a significant proportion of the variance in parent attribution scores that occurs between participants. The significant chi-square results in the fully unconditional model not only signified that hierarchical linear modeling is an appropriate analysis method for the current sample and research questions of the study but also supported the inclusion of additional predictor variables in the subsequent models. Calculation of the Intraclass Correlation Coefficient (ICC) was .737 for the fully unconditional model, implying that 73.7% of the variation in parent attribution scores is due to variability between participants. This also suggested that 26.3% of the variation in the outcome is due to variability within participants (i.e., across time).

In the next model, time (in weeks) was added to control for time and interpret baseline (i.e., intercept) scores of parent attribution. Results showed that the relationship between time and negative parent attribution scores was negative and statistically significant: $t(176) = -4.03$, $p<.001$. This indicated that more weeks passing since baseline predicted lower levels of negative parent attribution scores. Specifically, negative parent attribution measure scores decline .06 point per week for all participants. Time in weeks accounted for approximately 23.1% of the variance in negative parent attribution scores that occurs within children with ADHD ($R^2 = .231$). Variances on intercept and slope were both significant, indicating that baseline parent attribution scores vary by child ($\chi^2[147] = 742.60$, $p<.001$), and the change in parent-reported negative parent attribution across time varied by participants ($\chi^2[147] = 217.76$, $p<.001$). Significant variability on both slope and intercept suggested that other variables could account

for variance in baseline negative parent attribution scores and the slope of parent attribution change across time.

Model 3 investigated child and parent variables that predicted negative parent attribution scores pre-treatment (i.e., baseline). Among the predictors, only parent-reported child defiance/aggression (b=.07, SE=.02, t[155] = 4.79, p<.001) and parenting stress (b=.07, SE=.01, t[155] = 6.51, p<.001) were statistically significant predictors of negative parent attribution scores at baseline. Findings indicated that for every unit increase in defiance/aggression, there was a .07 unit increase in negative parent attribution; similarly, for every unit increase in parenting stress score, there was a .07 unit increase in negative parent attribution. Other predictors, including child age (b=-.02, SE =.02, t[155] = -1.04, p=.298), child assigned sex (b=-0.61, SE =.46, t[155] = -1.35, p=.180), parental ADHD (b=-0.17, SE =.40, t[155] = -.42, p=.675), and parent-reported child inattention/hyperactivity scores (b=0.02, SE =.03, t[155] = .92, p=.358), were not statistically significant. Predictors at level 2 accounted for approximately 54.6% of the variance in negative parent attribution scores that occur between children with ADHD (R^2 = .546).

Treatment Group Differences in Negative Parent Attribution Across Time

Prior to examining changes in parent attribution across time based on treatment group, a repeated measures ANOVA was conducted to determine whether the two treatment groups (i.e., face-to-face treatment group, online treatment group) could be merged into a single behavior parent training group. Descriptive PAM scores across assessment phases for each treatment group are presented in Table 8. Assumptions were tested prior to completing the analyses. Test of sphericity was violated (Mauchly's W = .77, χ^2[2] = 21.17, p<.001), therefore Greenhouse-Geiser corrections were applied to within-subjects effects (ε = .813). As shown in Table 9,

repeated measures ANOVA of pre-, mid-, and post-treatment parent attribution measure scores between face-to-face and online groups indicated significant group differences between subjects (F[1, 82] =4.13, p=.045, ηp^2=.048); however, there were no significant treatment x time interactions (F[1.626, 82] =.04, p=.933, ηp^2=.001). Because the primary aim of the study was to examine parent attribution changes over time as a function of treatment, the absence of significant treatment x time interaction prompted additional *t*-tests to further explore parent attribution measure scores at pre-, mid-, and post-treatment. Findings from the *t*-test, as shown in Table 10, revealed significant group score differences only at mid-treatment, $t(97) = -2.28$, $p = .025$, Cohen's $d = -.46$. Given that the HLM analyses focuses on linear change and cannot account for isolated mid-point differences, collapsing the two treatment groups (i.e., face-to-face, online) into a single treatment group for subsequent analyses was deemed appropriate for the current study.

Model 4 of the hierarchical linear modeling included treatment groups as a predictor of the intercept to control for baseline differences in parent attribution between groups (see Table 7). Predictors that were not significant at model 3 were dropped for model 4. Parent-reported defiance/aggression (b=.08, SE=.01, t[158] = 5.32, p<.001) and parenting stress (b=.07, SE=.01, t[158] = 6.44, p<.001) continued to significantly predict parent attribution scores at baseline. Negative parent attribution scores were not statistically different between those in treatment and waitlist groups (b=.01, SE=.41, t[158] =.035, p=.972) prior to treatment. Level 2 predictors in this model accounted for approximately 55.1% of the variance in parent attribution scores that occurs between children with ADHD (R^2 = .551).

In the final model (i.e., Model 5), cross-level interactions were added to investigate whether treatment group predicted differences in the slope of parent attribution scores over time.

Findings indicated that being in the treatment group (b=-.06, SE=.03, t[160] = -1.94, p=.054) did not significantly predict the slope for parent attribution scores. Although the effect was not statistically significant, there was a trend indicating that parents who participated in BPT reported lower negative parent attributions across time relative to parents in the waitlist group (see Figure 2). Specifically, the slope of parent attribution scores across time did not significantly differ for the treatment group when compared to families in the waitlist groups. Consistent with the previous model, child defiance/aggression scores (b=.08, SE=.01, t[158] = 5.31, p<.001) and parenting stress levels (b=.07, SE=.01, t[158] = 6.46, p<.001) reported by the parent remained as significantly predictors of parent attribution scores at baseline. Cross-level interactions at level 2 accounted for approximately 7.8% of the variance in the slope between time (in weeks) and parent attribution scores of their children (R^2=.078). Significant variance across participants in parent attribution at baseline (χ^2[139]=396.96, p<.001) and change over time (χ^2[141]=219.63, p<.001) remained after entering level 1, level 2, and cross-level interaction predictors in the final model, suggesting that additional level 2 variables not entered in the current model may explain more variance in baseline parent attribution scores and their change over time.

Test of Assumptions

Assumptions for hierarchical linear modeling were evaluated post hoc using the final model (model 5), which only included predictors that contributed meaningfully to model fit and interpretation. Although assumptions are often considered prior to model selection, in the current study the test of assumptions was conducted using the final model to evaluate the adequacy of the model used for interpretation. Linearity was examined through visual inspection of scatterplots of residuals for level 1 and level 2 predictors (for both the Empirical Bayes intercept and slope). Residuals appeared randomly scattered in all cases, suggesting that the assumption of

linearity was met. Normality and homoscedasticity were tested using histograms, scatterplots, and statistical analyses. All level 1 and 2 predictor residuals had skewness and kurtosis values that represented a normal distribution (i.e., skewness values of ± 2, kurtosis values of ± 3). Plots of residuals for level 1 and level 2 Empirical Bayes intercepts demonstrated homoscedasticity, and test of homogeneity of level 1 variance indicated no violations on homogeneity ($\chi^2[118]=35.51$, $p>.500$); however, the plot for the level 2 slope residuals showed a pillar-like pattern. This pattern likely reflects the fixed assessment time points (i.e., pre-treatment, mid-treatment, post-treatment) and does not warrant concern for the current study. Finally, multivariate normality was assessed for level 2 residuals by graphing the expected and actual Mahalanobis distances. The graph showed a relatively straight line on a 45-degree angle with a few outliers. Although there were a few extreme residuals, this may be due to treatment effects with some families showing larger changes in parent attribution than others, which may represent genuine variability in treatment response rather than data issues.

Chapter 4: Discussion

The current study sought to investigate negative attributions of parents with preschool-aged children with ADHD. Existing literature indicates that parents who hold negative attributions about their children are more likely to engage in harsh or ineffective parenting practices (Johnston & Chronis-Tuscano, 2015; Park et al., 2018). This pattern is particularly evident among parents of children with behavioral difficulties, such as ADHD, who are more prone to endorsing negative views of their child (Johnston & Ohan, 2005). This presents a critical challenge, as empirical evidence identifies BPT as the first-line intervention for children with ADHD. Consequently, it is essential to investigate the factors that are associated with child-referent parent attributions and their malleability to promote positive parenting practices in parent populations that may be especially vulnerable to negative attributions, which can undermine the effectiveness of evidence-based interventions for young children with ADHD. The current study aimed to expand understanding by focusing on preschoolers with ADHD, a population for whom early intervention may be critical to positive developmental outcomes. Specifically, the study assessed differences in negative parent attribution between parents of preschool children with and without ADHD and then explored child and parent variables that predicted negative parent attributions within parents of children with ADHD. Finally, this study explored whether participating in BPT coupled with optimistic parenting moderated the trajectory of negative parent attributions over time.

Parent Attribution Differences in Children with and without ADHD

Consistent with the primary hypothesis and prior research, the current study found that negative parent attribution scores were significantly higher for parents of children with ADHD compared to parents of typically developing children. Prior to receiving BPT, parents of

preschoolers with ADHD reported more negative views of their child and their behaviors, such as perceiving their child's behaviors as internal (i.e., "my child is a bad child"), permanent (i.e., "my child will always be a problem"), and intentional (i.e., "my child pushes my buttons on purpose"). This is in line with existing research on school-aged children with and without ADHD (Gerdes & Hoza, 2006; Johnston & Freeman, 1997), where parents of children with ADHD reported problem behaviors as internally caused and more stable relative to parents of typically developing children.

Notably, group status accounted for a substantial proportion of variance in attribution scores. The large effect size (η^2=.25) of the ANOVA indicated that even at an early stage of development, having a young child with ADHD accounted for 25% of the variance in parents' negative attributions. Given that prior research has suggested an association between parenting approaches and parents' negative attributions of their child, the present findings highlight the necessity of addressing such attributions early in the intervention process. For parents of children with ADHD, early attention to negative parental attributions is critical, as these beliefs may contribute to variations in the effectiveness of BPT. As such, parent attributions may serve as an additional target of intervention that could supplement existing BPT focused on parenting strategies to address child behaviors.

It is important to note that there were significant demographic differences between the ADHD and typically developing groups in terms of child sex, age, cognitive ability, and family SES. To account for demographic differences in the sample, these variables were entered into the ANOVA but were subsequently removed due to their lack of statistical significance in relation to negative parent attributions. These findings suggest that within this sample of preschoolers, negative parent attributions were not significantly associated with demographic variables, which

is encouraging given prior evidence linking parent attributions to parenting strategies (Park et al., 2018) and suggests that parent attributions may not be determined by child and family demographic characteristics, which are less amenable to change, in this age group.

Variables Associated with Negative Parent Attribution

The second research question focused on the ADHD sample to investigate specific variables associated with negative parent attributions. Results from the hierarchical linear modeling analyses were partially aligned with the second research hypothesis, such that greater child-level defiance/aggression and higher scores on parenting stress were significantly associated with higher pre-treatment negative parent attribution scores. Alternatively, no statistically significant associations were detected for child age, assigned sex at birth, child-level inattention/hyperactivity, and parental ADHD.

Consistent with current literature, defiance/aggression and parenting stress were significantly associated with parent negative parent attribution scores. Results showed that each unit increase in defiance/aggression was associated with a .07 unit increase in negative parent attribution in parents of preschoolers with ADHD. Thus, when parents reported higher child defiance/aggression scores, they also held more negative attributions of their preschool children, such as believing their children are “bad children”, display disruptive behaviors on purpose, and will continue exhibiting problem behaviors throughout their life. Oppositional and defiant behaviors, compared to inattentive and hyperactive behaviors, are perceived as more controllable, hence increasing the likelihood that parents place blame on their children for such behaviors (Chen et al., 2008; Danforth et al., 2016; Johnston & Patenaude, 1994).

Similarly, parenting stress was found to be significantly associated with negative parent attribution scores among parents of preschoolers with ADHD. Each unit increase in parenting

stress was associated with a .07 unit rise in negative parent attributions, indicating that parents reporting higher levels of stress perceived their children's behaviors more negatively. This is aligned with Ball Cooper et al.'s study (2018), which found that parents reporting high levels of stress were more likely to believe their child's problem behaviors were intentional and stable (i.e., these behaviors were exhibited on purpose and will be permanent). Together, these results highlight how both parenting stress and child defiant/aggressive behaviors contribute to negative parent attributions. This pattern of findings is encouraging, as it suggests that negative parent attributions are more closely linked to malleable factors rather than demographic or static factors, underscoring the relevance in targeting child defiant/aggressive behaviors and parenting stress in BPT interventions.

In contrast, child age, sex, inattention/hyperactivity, and parent ADHD status were not significantly associated with negative parent attributions in parents of preschoolers with ADHD. Regarding age, although existing literature supported more negative parent attributions for older children (Cote & Azar, 1997), the current sample did not support this relationship. Among preschoolers with ADHD, regardless of how old the child was, other variables such as the child's defiance/aggression and parenting stress explained the variance in the parents' attribution. This finding differs from much of the existing literature, which has explained that as children get older, parents tend to place greater blame on the child and interpret their behavior more negatively (Miller, 1995). Important to note, however, is that prior studies typically included a wide developmental span, ranging from preschool through adolescence, thereby capturing broader differences in parental expectations for their child's self-control and responsibility based on their development and age. In contrast, the current study focused solely on preschool-aged children, which restricted the variability in developmental expectations and likely reduced the

ability to detect an age effect. For preschool children, behaviors such as inattention, hyperactivity, impulsivity, and challenges with self-regulation may be seen as developmentally typical because young children under the age of five are still developing their executive functioning and self-regulation skills (Best & Miller, 2010). As children get older, however, parents generally expect greater self-regulation skills, thus making the same behaviors more likely to be perceived as intentional. It is therefore plausible that the non-significant finding reflects the limited age range and parent expectations of their preschool-aged children rather than the absence of an association between age and negative attributions.

Similarly, children's assigned sex was not significantly associated with negative parental attributions. Thus, parents' negative attributions of their child did not differ based on whether their child was male or female. This finding aligns with mixed results in the existing literature for preschool-aged children, where some studies have found sex differences in parent attributions (Maniadaki et al., 2005; Palm et al., 2019) and others did not (Chen et al., 2008; Nelson et al., 2013). One possible explanation is that in the early childhood age group, sex may be a less influential factor in shaping negative parent attributions. It may be that defiant and oppositional behavior, as well as parental stress may be more salient cues driving negative interpretations of child behavior. Another consideration prior research suggests, is that sex differences may emerge in specific domains of attribution. For instance, Maniadaki et al. (2005) found that among Greek parents of preschool children with ADHD, boys' problem behaviors were more likely reported as intentional and attention-seeking by their parents, whereas girls' problem behaviors were described as unintentional, attributed to biological causes, and seen as beyond their control. With a sample of Australian children ages 3 to 8 years old, Palm and colleagues (2019) reported that sex differences were significant for deliberate attributions (i.e., intentional) but not for other

subscales (i.e., permanence, disposition). The current study used a total attribution score which did not distinguish among the subdomains of intentionality, permanence, and disposition. Future research should examine subscale-specific attribution patterns in preschool-aged children to further assess whether sex differences are present within this young ADHD population.

Unexpectedly, child inattention/hyperactivity was not significantly associated with negative parent attributions for preschoolers with ADHD. Given that the first hypothesis of this study supported that parents of children with ADHD reported more negative attributions of their children, it is noteworthy that greater levels of inattention/hyperactivity, core symptoms of ADHD, were not significantly associated with higher negative attribution scores. One possible explanation for this finding is the shared variance between inattention/hyperactivity and defiance/aggression that may impact specific contributions of each symptom domain when entered into the hierarchical linear model simultaneously. Prior literature examining both inattentive/hyperactive and defiant/aggressive symptoms has reported that parents were more likely to rate oppositional/defiant behaviors as more controllable by children than inattentive/hyperactive behaviors, leading to more negative and upsetting parent reactions to defiant behaviors (Chen et al., 2008; Danforth et al., 2016; Johnston & Patenaude, 1994). When included in the same statistical model, it is possible that variance attributable to inattention/hyperactivity was accounted for by defiance/aggression, a more prominent and salient characteristic influencing parents' negative attributions, therefore yielding non-significant effects for inattention/hyperactivity. To better parse the unique variance contributed by inattention/hyperactivity, future research should consider a stepwise or hierarchical analytic approach that more clearly isolates their independent variance to negative parental attributions. Another possible explanation for the lack of variance may be due to the restricted range of

inattention/hyperactivity scores within the sample. The inclusion criteria for the current ADHD sample required inattention/hyperactivity scores at or above the 90th percentile, which reduced variability on this dimension. In contrast, no inclusion criteria were applied to defiance/aggression or parenting stress scores, allowing for greater variability in these measures.

The association between parental ADHD status and negative attributions toward their children with ADHD was not statistically significant in the current study. This result is consistent with mixed findings in the literature, where some studies report more negative attributional patterns among parents with ADHD, whereas others report no significant associations. Studies supporting this association reported that parents with ADHD diagnoses themselves were more likely to hold more negative parental attitudes toward their child (Miklósi et al., 2024). Additionally, Park and Johnston (2019) found that mothers who self-reported higher ADHD symptoms were more likely to blame their child for negative behaviors and to discount their child's positive actions. Alternatively, studies have found that parent ADHD symptom severity was not related to negative parent attributions (e.g., blaming) of their child's behavior (Lindström et al., 2022; Psychogiou, 2007). Banks et al. (2008) compared negative parent attributions between mothers with and without ADHD and did not find statistically significant group differences. Although results across studies are mixed, continued research is warranted to further examine the association between parent ADHD status and parental attributions, particularly to clarify whether parent ADHD may be associated with parenting stress or child disruptive behaviors in ways that relate to attributional processes and engagement in BPT.

Behavioral Parent Training Effects on Change in Negative Parent Attribution Over Time

The final research question examined whether participation in BPT combined with optimistic parenting sessions was associated with changes in negative parent attributions over

time. Contrary to the research hypothesis, changes in negative parent attributions did not significantly differ between parents who received the 10-week BPT with optimistic parenting and those who did not receive treatment during the study period, although the treatment x time interaction approached statistical significance (p = .054). Enrollment in BPT itself was not significantly associated with changes in parent attributions; however, parent-reported levels of child defiance/aggression and parenting stress significantly predicted the intercept of negative parent attributions (i.e., pre-treatment scores). In the final model, time as a separate variable also did not significantly predict changes in negative parent attributions.

Several factors may account for the non-significant intervention effects. First, the present study used an intent-to-treat approach where all participants randomized to the treatment group were included in the analyses regardless of their session participation. Given that the analyses did not control for treatment attendance or dosage, this may underestimate the effects of the intervention. Additionally, the treatment x time interaction approached statistical significance (p = .054), suggesting that limited statistical power may have contributed to the non-significant finding. In this paper, participants in the intervention group were a combination of participants in face-to-face and online treatment, whereas the comparison group consisted only of the waitlist control group. This resulted in unequal group sizes, which potentially could reduce statistical power of the analyses (Cohen, 1988). Future studies should recruit larger and more balanced samples to increase power to better evaluate whether participation in BPT is associated with positive changes in parent attributions over time.

Second, the presence of a floor effect in the parent attribution measure may have led to very low score variability. PAM scores from the current sample were lower than what was previously reported in another study (Sawrikar et al., 2018) that used the same measure (current

sample *M*=5.92; Sawrikar et al. *M*=8.94). This discrepancy in mean scores may be due to differences in the age ranges between study samples, as the current investigation focused on preschool children, whereas as Sawrikar et al.'s study sample included a wider age range (i.e., ages 3 to 16). Therefore, the restricted variability associated with this floor effect may have potentially reduced the sensitivity of the instrument to detect changes over the 10-week intervention period.

Limitations

Although the present findings contribute to the understanding of negative parent attributions for young children with ADHD, several limitations should be considered when interpreting these results. First, as noted previously, a floor effect was observed in the PAM scores within the current study sample. Though the PAM has a possible score range of 0 to 24, the mean score of the current preschool-aged sample was relatively low (ADHD group *M*= 5.92, typically developing group *M*=1.84). This restricted distribution may be attributable to the narrow age range of the sample, as the present study focused exclusively on preschool-aged children. In contrast, prior research using the same measure included children across a broader developmental span (i.e., preschool to adolescence) and reported higher overall PAM scores (Sawrikar et al., 2018). This floor effect may have limited the ability to observe meaningful differences in parent attributions as a function of BPT.

It is also important to note the markedly low internal consistency ($\alpha = .54$) in the typically developing group. This may be attributable to the floor effect and high kurtosis in the subsample PAM scores ($k = 3.13$). This finding raises questions about the measure's appropriateness for use with preschool-aged typically developing children. Although prior research supported the psychometric properties of the PAM, this was specific for a clinical sample of children and

adolescents with treatment referrals for conduct concerns (Sawrikar et al., 2019). As such, it remains unclear whether this measure is a valid measure of parent attributions for typically developing populations. Future research should further examine the reliability and validity of the PAM among typically developing preschool-aged children to determine its suitability for use in nonclinical samples.

Additionally, the use of a total PAM score precluded examination of attributional subdomains (i.e., intentionality, permanence, and disposition), which may differentially relate to parenting stress, child's defiance/aggressive behaviors, and demographic variables such as sex or age. However, given the overall low level of attribution scores observed in the sample, subscale-level analyses may have been similarly limited by the restricted variability.

Second, the study employed an intent-to-treat analytic approach and therefore did not account for treatment attendance, dosage, or engagement. As a result, variability in actual treatment exposure may have affected outcomes and potentially reduced observed intervention effects. Furthermore, the present study did not control for families in the waitlist group who may have accessed treatment outside of the study or for children receiving medication treatment during the study period. Thus, differential intervention exposure may have introduced additional variability, making it difficult to attribute changes solely to the BPT with optimistic parenting. Future investigations of intervention effects on parent attributions should account for attendance and concurrent interventions to more precisely assess the effects of BPT with optimistic parenting on parent negative attributions.

Last, the study sample for both ADHD and typically developing groups was skewed in terms of socioeconomic status (i.e., income), primary caregiver education status, and race. Participants were predominantly White and highly educated, with most primary caregivers

having completed at least a four-year college degree, and many reporting postgraduate training (approximately 37% of primary caregivers in the ADHD group and approximately 62% of primary caregivers in the typically developing group). Household incomes were also relatively high, indicating a predominantly higher-SES sample. Although these demographic variables were not significantly associated with negative parent attributions, they may have been related to other study variables such as parenting stress. In addition, the current study used the Hollingshead Index (Hollingshead, 1975) as a measure of SES. Although it is a widely used measure in research, it has been criticized for being outdated and for not fully capturing the complexity and evolving nature of socioeconomic factors that impact the family (Duncan & Magnuson, 2003). As a result, the generalizability of the findings to more socioeconomically and racially diverse populations should be interpreted with caution.

Clinical Implications

Findings from this study have several implications for clinical practice. First, even at a very young child age (i.e., ages 3 to 5), parents of children with ADHD reported significantly more negative attributions toward their children compared to typically developing preschool children. This indicates that attributional biases can emerge early in development, and negative attributions of child behavior may place young children with ADHD at heightened risk for harsher or less supportive parenting practices (Johnston & Chronis-Tuscano, 2015), emphasizing the importance of early identification and intervention for children with ADHD. Early preventive interventions, specifically interventions that combine BPT and optimistic parenting may therefore be particularly beneficial during this developmental period. These findings also have implications for educators working with young children in school settings, especially preschool educators who work with both children with ADHD and their typically developing peers.

Preschool educators may benefit from understanding how their own interpretations of children's challenging behaviors may influence classroom interactions and behavioral expectations. They may also benefit from recognizing that parents of young children with ADHD and other behavior disorders may experience greater parenting stress and hold more negative attributions toward their child's behavior. Greater awareness of the association between parent attributions and the implementation of behavioral strategies may help educators better understand parent concerns, foster collaborative relationships with families, and promote consistent, positive behavioral support for preschoolers with ADHD

Second, negative parent attributions were not significantly associated with static demographic characteristics such as child age, child sex, parental ADHD, race, cognitive ability, or socioeconomic status. Instead, they were significantly associated with more malleable factors such as child defiant/aggressive behaviors and elevated parenting stress. These findings suggest that, during the preschool period, parent attributions may represent a modifiable and clinically actionable treatment target for parents of young children with ADHD.

The association between child defiance/aggression and elevated parenting stress with more negative parent attributions highlights the importance of understanding the complex relationships among child behavior, parental stress, and parental cognitions, which may hamper the effectiveness of BPT if not systematically addressed. Prior work by Sawrikar et al. (2019) demonstrated a pathway from negative parental attributions to increased parental negativity toward their children, harsher discipline practices, and subsequent conduct problems. Although causal inferences cannot be drawn, these findings suggest that defiant and aggressive child behaviors and heightened parenting stress may play an important role in shaping how parents interpret their child's behavior, with implications for treatment engagement and consistency in

implementing positive parenting strategies (Chacko et al., 2017; Jiang et al., 2018). When defiant behaviors and parenting stress are not adequately addressed, negative parent attributions may become more salient, potentially undermining parents' use of effective behavioral strategies and contributing to a cycle in which parent stress, negative attributions, and child problem behaviors exacerbate one another over time. Accordingly, results of the current study highlight the clinical importance of assessing defiant/aggressive behaviors of young children with ADHD, along with implementing interventions that concurrently target child defiant/aggressive behaviors, parenting stress, and negative parent attributions, such as BPT programs that integrate behavioral strategies with cognitive restructuring components.

To address these factors, BPT programs may benefit from more explicitly targeting negative parent attributions through cognitive-behavioral strategies. In addition to behavior management components, interventions could incorporate cognitive restructuring techniques to help parents identify and reframe unhelpful thoughts and perceptions about their child's behavior (Chronis-Tuscano et al., 2021). This may include psychoeducation on the relationship among thoughts, emotions, and behaviors (Beck, 1976), as well as guided practice applying these skills to real-life examples of their own child's challenging behaviors. In doing so, parents may change their interpretations of negative behaviors thus reducing the likelihood of viewing developmentally appropriate or symptom-related behaviors as intentional or controllable. The optimistic parenting component used in the current study represents this approach by teaching parents to identify and challenge pessimistic thoughts and replace them with more helpful and positive interpretations through cognitive restructuring techniques (Durand et al., 2009; Durand et al., 2013). Although the current study did not demonstrate statistically significant changes in parent attributions following treatment, future research should continue to examine whether

incorporating attribution-focused and optimism-based components may enhance the effectiveness of BPT for families of preschoolers with ADHD.

The implementation of BPT with components of optimistic parenting should also consider the family's cultural context, as cultural beliefs and parenting values shape expectations for child behavior, parent-child relationships, and appropriate disciplinary practices (Lansford, 2022). In addition, cultural beliefs may influence how ADHD and its symptoms are understood and interpreted, as well as how BPT is perceived as an intervention (Lawton et al., 2016; Paidipati, et al., 2017). Consequently, behaviors perceived as defiant, inattentive, or inappropriate may be interpreted differently across cultural groups, potentially influencing both parents' attributions and their responsiveness to BPT and optimistic parenting interventions. Therefore, clinicians should consider families' cultural beliefs, parenting values, and understanding of ADHD when implementing BPT with components of optimistic parenting. Future research should also examine how cultural factors influence the development and modification of parent attributions and evaluate whether culturally responsive adaptations of BPT and optimistic parenting interventions improve outcomes across diverse populations.

Finally, although inattention and hyperactivity were not significantly associated with negative parent attributions in the current analyses, this finding may reflect shared variance with defiant and aggressive behaviors. As such, clinicians should remain attentive to negative parent attributions even among families of children who primarily present with inattentive symptoms or exhibit fewer aggressive behavior concerns.

Overall, these findings suggest that clinicians should consider assessing and directly addressing negative parent attributions as part of intervention planning for families of preschoolers with ADHD. Incorporating attribution-focused components, such as cognitive

reframing and stress reduction strategies, may enhance parental engagement, improve the implementation of recommended parenting strategies, and ultimately support more effective BPT outcomes (Chronis-Tuscano et al., 2021; Novick et al., 2022). Finally, these results underscore the need for continued research examining how parent attributions may facilitate or hinder participation in, and adherence to, behavioral interventions for young children with ADHD.

Conclusion

In conclusion, the present study contributes to the growing literature on parent attributions among caregivers of young children with ADHD. This investigation identified individual factors associated with negative parent attributions and examined whether negative attributions changed following a 10-week BPT paired with optimistic parenting. Although no significant change in parent attributions was observed, likely due to a floor effect, results indicated that, even in early childhood, parents of children with ADHD endorsed more negative attributions than parents of typically developing children, and that higher levels of child defiance and aggression and elevated parenting stress were associated with greater negative parent attributions. Notably, negative parent attributions were not related to demographic characteristics or parental ADHD status, indicating that parent attributions are malleable and may be a clinically actionable target within BPT. Future research should further examine the pathways through which parent attributions affect treatment engagement and child behavior outcomes, as well as identify intervention strategies that effectively promote more positive parent attributions among caregivers of preschoolers with ADHD.

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Table 1

Sample Characteristics

	ADHD Group (*N*=176)	Non-ADHD Group (*N*=68)	Total (*N*=244)	Group Difference
		M (*SD*)		*t*
Age (months) at Baseline	54.20 (8.96)	51.82 (8.07)	53.54 (8.77)	-1.91
Cognitive Ability (GCA)	103.05 (12.88)	111.19 (12.21)	105.49 (13.20)	4.43***
Children's Global Assessment Scale	55.14 (7.71)	92.46 (3.80)	65.43 (18.06)	50.18***
		(*n*, %)		χ^2
Child Assigned Sex				
Male	118 (67.0%)	36 (52.9%)	154 (63.1%)	4.19*
Female	58 (33.0%)	32 (47.1%)	90 (36.9%)	
Race				
White	147 (84.0%)	60 (88.2%)	207 (85.2%)	0.70
Black or African American	20 (11.4%)	4 (5.9%)	24 (9.9%)	1.69
Asian	12 (6.9%)	6 (8.8%)	18 (7.4%)	0.28
Other	22 (12.6%)	2 (2.9%)	24 (9.9%)	5.10*
Ethnicity (Hispanic)	39 (22.5%)	6 (8.8%)	45 (18.7%)	6.05*
Caregiver Gender				
Female	165 (94.3%)	67 (98.5%)	232 (95.5%)	2.04
Male	10 (5.7%)	1 (1.5%)	11 (4.5%)	
Marital Status				
Single, never married	33 (18.9%)	4 (5.9%)	37 (15.2%)	
Married	127 (72.6%)	63 (92.6%)	190 (78.2%)	
Separated	6 (3.4%)	1 (1.5%)	7 (2.9%)	12.09*
Divorced	8 (4.6%)	0 (0%)	8 (3.3%)	
Widowed	1 (0.6%)	0 (0%)	1 (0.4%)	
Primary Caregiver Education Status				
Completed post-graduate training	66 (37.7%)	43 (63.2%)	109 (44.9%)	
Completed college, received a four year degree	49 (28.0%)	17 (25.0%)	66 (27.2%)	16.89**
Attended college, but did not receive a four year degree	33 (18.9%)	6 (8.8%)	39 (16.0%)	

Completed high school or trade school or other non-academic training requiring high school completion for admission	22 (12.6%)	2 (2.9%)	24 (9.9%)	
Partial high school (10th or 11th grade)	2 (1.1%)	0 (0%)	2 (0.8%)	
Information not available	3 (1.7%)	0 (0%)	3 (1.2%)	
Primary Caregiver Occupation				
Higher executive, proprietor of large business and major professional	17 (9.7%)	14 (20.6%)	31 (12.8%)	
Administrator, lessor professional, proprietor of medium-sized business	27 (15.4%)	7 (10.3%)	34 (14.0%)	
Small business owner, farm owner, manager, minor professional	17 (9.7%)	5 (7.4%)	22 (9.1%)	
Technician, semi-professional, small business owner	3 (1.7%)	0 (0%)	3 (1.2%)	
Clerical and sales worker, very small farm and business owner	6 (3.4%)	4 (5.9%)	10 (4.1%)	11.31
Smallest business owner, skilled manual laborer, craftsman, tenant farmer	2 (1.1%)	2 (2.9%)	4 (1.6%)	
Machine operator or semiskilled worker	3 (1.7%)	1 (1.5%)	4 (1.6%)	
Unskilled worker	1 (0.6%)	1 (1.5%)	2 (0.8%)	
Student	4 (2.3%)	1 (1.5%)	5 (2.1%)	
Housewife	29 (16.6%)	13 (19.1%)	42 (17.3%)	
Disabled	3 (1.7%)	0 (0%)	3 (1.2%)	
Unemployed	5 (2.9%)	2 (2.9%)	7 (2.9%)	
Other	58 (33.1%)	18 (26.5%)	76 (31.3%)	
Income				
Less than 10,000	4 (2.3%)	0 (0%)	4 (1.6%)	
10,000- 14,999	3 (1.7%)	0 (0%)	3 (1.2%)	
15,000-24,999	4 (2.3%)	0 (0%)	4 (1.6%)	
25,000- 34,999	8 (4.6%)	0 (0%)	8 (3.3%)	
35,000- 49,999	18 (10.3%)	2 (2.9%)	20 (8.2%)	16.97*
50,000- 99,999	51 (29.1%)	17 (25.0%)	68 (28.0%)	

100,000- 149,999	41 (23.4%)	23 (33.8%)	64 (26.3%)	
150,000- 199,999	19 (10.9%)	7 (10.3%)	26 (10.7%)	
200,000 or more	27 (15.4%)	19 (27.9%)	46 (18.9%)	
ADHD Presentation				
ADHD-Inattentive	19 (10.8%)	0 (0%)	-	
ADHD-Hyperactive/Impulsive	60 (34.1%)	0 (0%)	-	
ADHD-Combined	97 (55.1%)	0 (0%)	-	-
ODD Criteria Met	80 (45.5%)	0 (0%)	-	-
CD Criteria Met	9 (5.1%)	0 (0%)	-	-
Medication	10 (6.0%)	-	-	-

Note. ADHD = attention-deficit/hyperactivity disorder. ODD = oppositional defiant disorder. CD = conduct disorder.

Table 2

Intervention Session Content by Week

Week	Behavior management content	Optimistic parenting content
1	Psychoeducation on ADHD; Prioritizing problem behaviors	Identifying negative thoughts, Reframing pessimistic thoughts into optimistic thoughts, Introducing self-talk journals
2	Establishing clear expectations; Labeled praise; Intentional/balanced attending	Review of self-talk journal, Distractions
3	General behavior strategies (developing structure and routine, reward charts)	Review distractions
4	The Problem Solving Approach; Identifying the behavior, trigger, and function; How to write a ABC chart	Review use of strategies, Identifying success and barriers with implementation of optimistic parenting strategies
5	Developing summary statements; Review three intervention categories; Introduction to preventative strategies	Introduction to disputation
6	Introduction to teaching strategies	Introduction to substitution; Identifying barriers to productive thoughts
7	Introduction to response strategies (e.g., planned ignoring and time-out)	Practice skills to recognize and modify self-talk; Focusing on success
8	Caregiver stress reduction strategies; Review successful behavior management strategies; Develop community behavior management plan	Practice skills to recognize and modify self-talk
9	Pre-academics skills; Introduction and practice of dialogic reading; Review early math skills	Maintain and practice optimism strategies
10	Strategies for effective home-school communication/collaboration; Review 504 Plan and IEP	Review of optimistic parenting strategies

Table 3

Hierarchical Linear Model Data Analysis Plan

	Model	Expanded Form	Reduced Form
1	Fully Unconditional Model	*Level 1* $PAM_total_{ti} = \pi_{0i} + e_{ti}$ *Level 2* $\pi_{0i} = \beta_{00} + r_{0i}$	$PAM_total_{ti} = \beta_{00} + r_{0i} + e_{ti}$
2	Time (level 1) on intercept	*Level 1* $PAM_total_{ti} = \pi_{0i} + \pi_{1i}*(weeks_{ti}) + e_{ti}$ *Level 2* $\pi_{0i} = \beta_{00} + r_{0i}$ $\pi_{1i} = \beta_{10} + r_{1i}$	$PAM_total_{ti} = \beta_{00} + \beta_{10}*weeks_{ti} + r_{0i} + r_{1i}*weeks_{ti} + e_{ti}$
3	Time (level 1) and child and parent (level 2) predictors on intercept	*Level 1* $PAM_total_{ti} = \pi_{0i} + \pi_{1i}*(weeks_{ti}) + e_{ti}$ *Level 2* $\pi_{0i} = \beta_{00} + \beta_{01}*(age_i) + \beta_{02}*(sex_i) + \beta_{03}*(parentADHD_i) + \beta_{04}*(inathyp_i) + \beta_{05}*(defiag_i) + \beta_{06}*(psi_i) + r_{0i}$ $\pi_{1i} = \beta_{10} + r_{1i}$	$PAM_total_{ti} = \beta_{00} + \beta_{01}*age_i + \beta_{02}*sex_i + \beta_{03}*parentADHD_i + \beta_{04}*inathyp_i + \beta_{05}*defiag_i + \beta_{06}*psi_i + \beta_{10}*WEEKS_{ti} + r_{0i} + r_{1i}*WEEKS_{ti} + e_{ti}$
4	Time (level 1), significant child and parent (level 2), treatment (level 2) predictors on intercept	*Level 1* $PAM_total_{ti} = \pi_{0i} + \pi_{1i}*(weeks_{ti}) + e_{ti}$ *Level 2* $\pi_{0i} = \beta_{00} + \beta_{01}*(defiag_i) + \beta_{02}*(psi_i) + \beta_{03}*(TX_i) + r_{0i}$ $\pi_{1i} = \beta_{10} + r_{1i}$	$PAM_total_{ti} = \beta_{00} + \beta_{01}*defiag_i + \beta_{02}*psi_i + \beta_{03}*TX_i + \beta_{10}*weeks_{ti} + r_{0i} + r_{1i}*weeks_{ti} + e_{ti}$
5	Time (level 1), significant child and parent (level 2), treatment (level 2) predictors on intercept Cross-level interactions (treatment x time)	*Level 1* $PAM_total_{ti} = \pi_{0i} + \pi_{1i}*(weeks_{ti}) + e_{ti}$ *Level 2* $\pi_{0i} = \beta_{00} + \beta_{01}*(defiag_i) + \beta_{02}*(psi_i) + \beta_{03}*(TX_i) + r_{0i}$ $\pi_{1i} = \beta_{10} + \beta_{11}*(TX_i) + r_{1i}$	$PAM_total_{ti} = \beta_{00} + \beta_{01}*defiag_i + \beta_{02}*psi_i + \beta_{03}*TX_i + \beta_{10}*weeks_{ti} + \beta_{11}*TX_i*weeks_{ti} + r_{0i} + r_{1i}*weeks_{ti} + e_{ti}$

Child age in months (age), inattention/hyperactivity (inathyp), defiance/aggression (defiag), parenting stress (psi) have been centered around the grand mean.

Table 4

Variables at Baseline

	ADHD Group		Non-ADHD Group		Total Sample		Group difference
	N	*M* (*SD*)	*N*	*M* (*SD*)	*N*	*M* (*SD*)	*t*
Age in months	176	54.20 (8.96)	68	51.82 (8.07)	244	53.54 (8.77)	-1.91
Cognitive ability (GCA)	159	103.05 (12.88)	68	111.19 (12.21)	227	105.49 (13.20)	4.43***
SES (Hollinghead index)	175	36.46 (16.61)	68	41.30 (16.16)	243	37.81 (16.60)	2.05*
PAM	166	5.92 (3.65)	68	1.84 (1.78)	234	4.73 (3.71)	-11.44***
Inattention/ hyperactivity[a]	167	79.14 (9.58)	67	46.45 (7.01)	234	69.78 (17.28)	-28.87***
Defiance/ aggression[a]	167	71.12 (14.31)	67	49.34 (8.10)	234	64.88 (16.18)	-14.67***
Parenting stress[a]	162	96.12 (22.08)	66	61.53 (15.78)	228	86.11 (25.78)	-13.28***
	N	*n* (%)	*N*	*n* (%)	*N*	*n* (%)	χ^2
Assigned male at birth	176	118 (67.0%)	68	36 (52.9%)	244	154 (63.1%)	4.19*
White, non-Hispanic	176	114 (64.8%)	68	53 (77.9%)	244	167 (68.4%)	3.94*
Parent ADHD	164	37 (22.6%)	67	9 (13.4%)	231	46 (19.9%)	2.49

N represents total group sample size, *n* represents subgroup sample size. [a]Variables were only analyzed for ADHD group in the current paper. ***p<.001, **p<.01, *p<.05.

Table 5

Bivariate Correlation of Baseline Variables

	Age (mo)	Sex	White-nonhisp	GCA	SES	PAM	ADHD group	Inatt/ Hyper	Def/Agg	PSI Total	Parent ADHD
Age (mo)	-										
Sex	-.01	-									
White-nonhisp	.07	-.06	-								
GCA	**.14***	**.18****	-.04	-							
SES	.02	.02	-.07	.04	-						
PAM	-.03	-.05	-.05	-.08	-.04	-					
ADHD group	.12	**-.13***	**.13***	**-.28****	**-.13***	**.50****	-				
Inatt/ Hyper	.07	-.00	.06	**-.21****	-.12	**.55****	**.86****	-			
Def/Agg	.02	.01	.02	**-.14***	**-.13***	**.69****	**.61****	**.68****	-		
PSI Total	.03	-.06	.01	**-.20****	-.08	**.71****	**.61****	**.63****	**.73****	-	
Parent ADHD	.03	.10	-.04	-.01	-.03	**.19****	.10	**.15***	**.21****	**.22****	-

Note. GCA = global cognitive ability. SES = socioeconomic status. PAM = Parent Attribution Measure. ADHD = attention-deficit/hyperactivity disorder. PSI = Parenting Stress Index. $^{**}p<.01$, $^{*}p<.05$.

Table 6

ANOVA for Parent Attribution Measure (PAM) Comparing ADHD and Non-ADHD Groups

	N	Mean (*SD*)	Skewness	Kurtosis	Welch's *F*	η^2
ADHD group	166	5.92 (3.65)	0.74 (0.19)	0.17 (0.38)	130.828***	.25
Non-ADHD group	68	1.84 (1.78)	1.45 (0.29)	3.13 (0.57)		

*Dependent variable = Parent Attribution Measure (PAM) at baseline. ***p<.001*

Table 7

Hierarchical Linear Models Predicting Parent Attribution Measure

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Est.	*SE*	*Est.*	*SE*	*Est.*	*SE*	*Est.*	*SE*	*Est.*	*SE*
Intercept	5.32***	.25	5.73***	.26	5.10***	.24	5.80***	.32	5.68***	.33
Treatment time (wks)	-	-	-.06***	.01	-.06***	.02	-.06***	.02	-.02	.02
Age at baseline (mo)[a]	-	-	-	-	-.02	.02	-	-	-	-
Assigned sex at birth	-	-	-	-	-.61	.46	-	-	-	-
Inattention/hyperactivity[a]	-	-	-	-	0.02	.03	-	-	-	-
Defiance/aggression[a]	-	-	-	-	.07***	.02	.08***	.01	.08***	.01
Parenting stress[a]	-	-	-	-	.07***	.01	.07***	.01	.07***	.01
Parent ADHD	-	-	-	-	-.17	.40	-	-	-	-
Treatment group	-	-	-	-	-	-	.01	.41	.20	.42
Slope										
Treatment*tx time	-	-	-	-	-	-	-	-	-.06	.03
Variance component (χ^2)										
Intercept, r_0	1403.07***		742.60***		390.89***		400.28***		396.96***	
df	176		147		136		139		139	
Treatment time slope, r_1	-		217.76***		227.02***		226.70***		219.63***	
df	-		147		142		142		141	

***p<.001, **p<.01, *p<.05. [a]Variables were grand-mean centered.

Table 8

PAM Score Means and Standard Deviations Across Assessment Phases for Each Treatment Group

	Face-to-face treatment group	Online treatment group	Waitlist control group
Pre-treatment PAM	5.25 (3.54)	6.41 (3.84)	6.19 (3.56)
Mid-treatment PAM	4.15 (2.57)	5.57 (3.64)	5.69 (3.53)
Post-treatment PAM	3.93 (2.84)	4.83 (3.72)	6.02 (3.94)

Table 9

Repeated Measures ANOVA

	Sum of Squares	*df*	Mean Square	*F*	*p*	ηp^2
Between subjects						
Tx group	103.85	1	103.85	4.13	.045	.048
Within-Subjects						
Time	65.89	1.626	32.94	9.63	<.001	.105
Tx group * Time	.282	1.626	.173	.04	.933	.001

Table 10

Face-to-Face versus Online Group PAM Scores: t-Test

	Face-to-face treatment group	Online treatment group	*t*	*df*	*p*	Cohen's *d*
Pre-treatment PAM	5.25 (3.54)	6.41 (3.84)	-1.64	107	.105	-.32
Mid-treatment PAM	4.15 (2.57)	5.57 (3.64)	-2.28	97	.025	-.46
Post-treatment PAM	3.93 (2.84)	4.83 (3.72)	-1.37	96	.175	-.28

Figure 1

Visual Representation of HLM Analyses

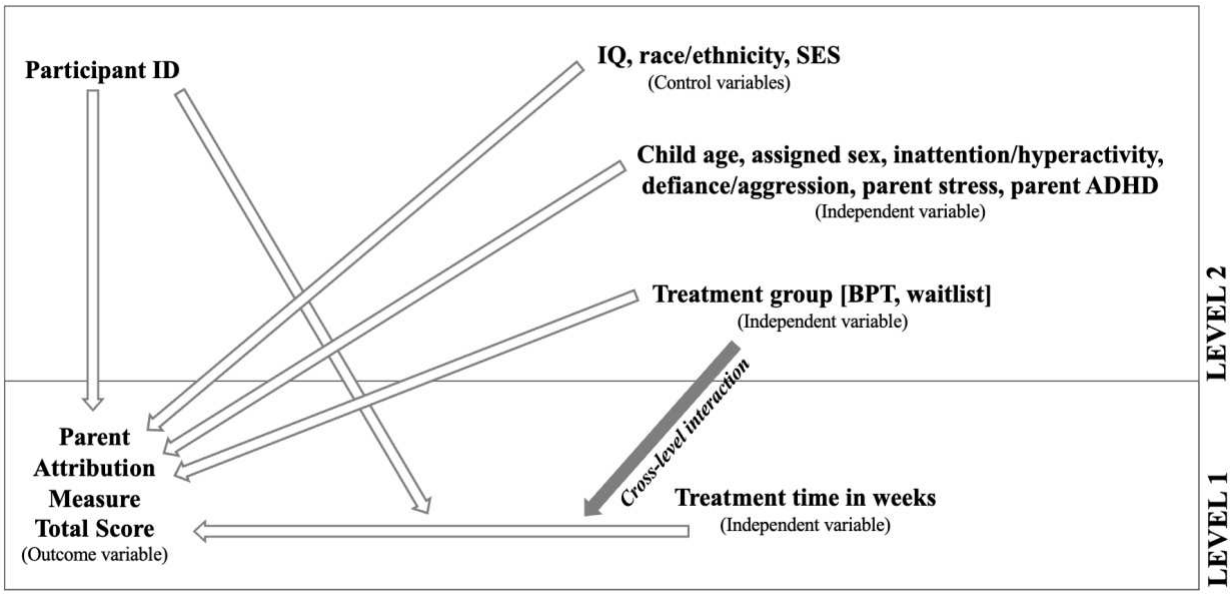
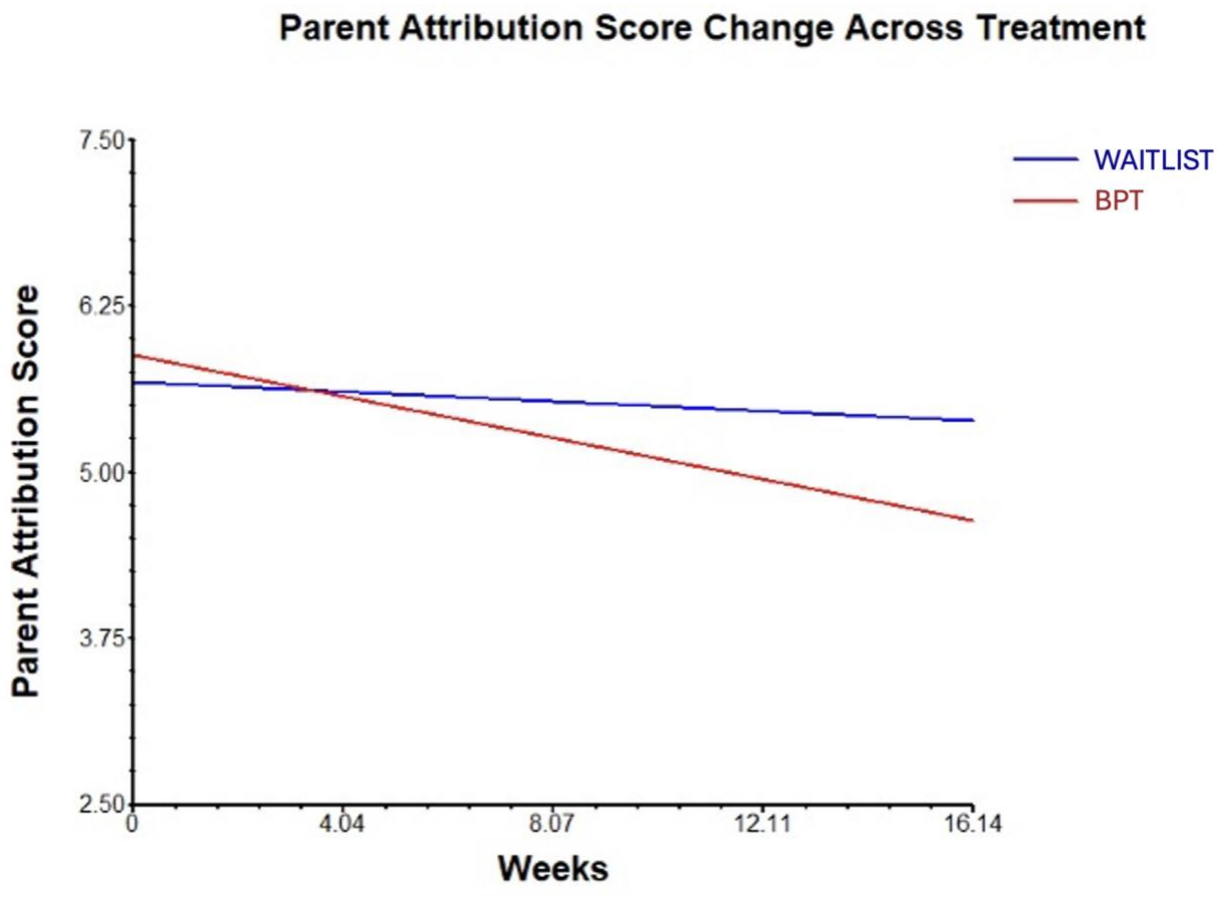


Figure 2

Graph of Change in PAM Scores Across Time by Group



Vita

Hi Jae Jung, M.A.
hij220@lehigh.edu

Education

2020 – Present	**Ph.D. student (Doctoral candidate) in School Psychology** Lehigh University, Bethlehem, PA Dissertation Proposed: Parent attributions of preschool children with ADHD: associated factors and changes in attributions after behavior parent training
2017 – 2019	**M.A. in Child Psychology and Education** Sungkyunkwan University, Korea, 2019 Thesis: The moderating effect of latent school climate profiles in the relationship between self-control and school adjustment
2013 – 2017	**B.A. (Double Major) in Psychology; Child Psychology and Education** Sungkyunkwan University, Korea, 2017

Clinical Experience

2025.08 – Present	**Psychology Resident (Integrated Behavioral Health track), Nemours Children's Health (Wilmington, DE)** ***Integrated Primary Care Rotation:*** Working under the supervision of licensed psychologists in two integrated primary care settings to evaluate and address emotional/behavioral concerns in children and adolescents. Providing brief, evidence-based interventions and coordinating referrals for appropriate long-term care. Conducting autism screenings and brief ADHD evaluations to support diagnostic clarification ***Adolescent Medicine Rotation:*** Working under the supervision of a licensed psychologist to work adolescents with mood and anxiety concerns. Conducting intake interviews and providing individual or family therapy for patients, using strategies from cognitive-behavioral therapy (CBT), dialectical behavioral therapy (DBT), and acceptance and commitment therapy (ACT). ***Autism Testing Rotation:*** Working under the supervision of a licensed psychologist to complete comprehensive evaluations for autism spectrum disorder (ASD). Co-administering the ADOS-2, administering cognitive assessments (e.g., WISC-V, DAS-II), interpreting ratings scales (e.g., ASRS, ABAS, BASC, Conners), and reviewing medical and educational data (e.g., EMR, IEP). Writing integrated reports and co-leading feedback

sessions with parents and other psychologists to discuss diagnosis and future interventions.
Unified Protocol – Group: Co-facilitated the implementation of a 6-week adaptation of the Unified Protocol for Transdiagnostic Treatment of Emotional Disorders in Children (UP-C; Ehrenreich-May et al., 2014) in a virtual group setting under the supervision of a licensed psychologist. Provided psychoeducation and hands-on practice of CBT skills for children ages 8-13 with mood and anxiety concerns.
Autism Behavior Consultation Rotation: Working under the supervision of a licensed psychologist to provide parent mediated behavior management and use of adapted CBT for children and adolescents with autism spectrum disorder.
Supervisors: Kathryn Hoffses, PhD; Jennifer Kuhn, PhD; Robert Washington, PhD; Rogelio Mercado, PhD; Zohal Heidari, PhD; Emily Bernabe, PhD
Training directors: Kira Branch, PsyD; Joanna Smith, PhD

2024.07 – 2025.06 **Psychology Extern, Nemours Children's Health (Wilmington, DE)**
Parent-Child Interaction Therapy: Worked under the supervision of a licensed psychologist to address behavioral concerns in young children. Conducted evaluations to determine fit for PCIT, led teach sessions for CDI/PDI skills, and coached parents CDI/PDI skills using bug-in-the-ear device.
Clinical Child and Adolescent Therapy: Worked under the supervision of a licensed psychologist to work with children and adolescents with eating disorders (e.g., anorexia nervosa) and anxiety (e.g., selective mutism). Conducted intake interviews and provided individual or family therapy for patients using a cognitive-behavioral approach (CBT), exposure-based therapy, or family-based treatment (FBT) depending on the case.
Supervisors: Chrissy Cammarata, PhD; Zohal Heidari, PhD

2024.01 – 2024.06 **Psych Extern, Children's Hospital of Philadelphia (Philadelphia, PA)**
Middle School Organizational Skills Training Group (MOST): Worked under the supervision of a licensed psychologist to implement organizational skills training for middle school students with ADHD. Used the OST manual (Gallagher et al., 2014) to co-facilitate group interventions for two cohorts of middle school students and their parents.
Supervisor: Shannon Ryan, PhD

2023.08 – 2024.06 **Psych Extern, Children's Hospital of Philadelphia (Philadelphia, PA)**

ADHD Diagnostic and Psychoeducational Evaluation Externship: Worked under the supervision of a licensed psychologist to diagnose ADHD and evaluate possible specific learning disabilities. Conducted adapted version of the Kiddie Schedule for Affective Disorders and Schizophrenia (K-SADS), administered psychoeducation assessments (e.g., WISC-V, WIAT-4, WJ-ACH), wrote clinical reports, and led feedback sessions with parents and other psychologists to discuss diagnosis and future interventions.
Supervisor: Emily Edelson, PsyD

2023.08 – 2024.06 **Practicum Student, Whitehall-Coplay Middle School (Whitehall, PA)**
Worked with a nationally certified school psychologist (supervisor) as part of a school-based practicum experience. Individually conducted cognitive and academic assessments (e.g., WISC-V, WIAT-4), completed student observations, scored psychological assessments (e.g., BASC, GRS), reviewed student records, wrote re-evaluation reports, and led student evaluation meetings with parents and school faculty to determine the student's qualification for special education services.
Supervisor: Laurie Ganey Pash, MS, EdS, NCSP

2022.08 – 2023.06 **Practicum Student, St. Luke's KidsCare (Bethlehem, PA)**
Integrated Behavioral Health Program: Worked under the supervision of a licensed psychologist to address behavioral concerns of children. Conducted intake interviews, provided short-term counseling and psychoeducation to parents, children, and adolescents with behavioral and emotional concerns using cognitive behavioral techniques and effective parenting strategies (e.g., cognitive reframing, behavioral activation, specific praise, setting expectations), and wrote clinical notes.
Supervisor: Jennifer Brisbane, PhD

2022.08 – 2023.06 **Practicum Student, Tracy Elementary School (Easton, PA)**
Worked with a nationally certified school psychologist (supervisor) as part of a school-based practicum experience. Individually conducted cognitive and academic assessments (e.g., WISC-V, WIAT-4, KBIT-2), conducted student observations, scored psychological assessments (e.g., BASC, Vineland), reviewed student records, wrote evaluation reports, and led student evaluation meetings with parents and school faculty to determine the student's qualification for special education services.
Supervisor: Nina Powers, MEd, EdS, NCSP

2021.08 – 2022. 06 **Practicum Student, Donegan Elementary School (Bethlehem, PA)**
Worked with a nationally certified school psychologist (supervisor) as part of a school-based practicum experience. Individually conduct cognitive and academic assessments (e.g., WISC-V, WIAT-4, CTONI-2, Bracken, K-ABC-II), conducted student observations, score psychological assessments (e.g., BASC, ASRS, ABAS), write evaluation reports, and lead student evaluation meetings with parents and school faculty to determine the student's qualification for special education services.
Supervisor: Laurie Ganey Pash, MS, EdS, NCSP

2016.04 – 2020. 06 **Clinical Researcher/Tutor, The MindCare Institute of Korea (Seoul, Korea)**
Mindcare Attention Program: Worked individually with students on attention training through a computerized program. Participated in meetings with parents and school teachers on target areas for students and devised individually tailored programs for each student to include interventions for other concerns varying from anger management to reading disorders. (since 2018)
Tutoring: Provided specialized tutoring for students at the clinic. Tutoring involved modifying school material for the student through discussions with schoolteachers, assisting and preparing students with upcoming school projects or tests, and working on academic-related target areas such as reading, writing, or math that are suitable for the student's academic level. (since 2017)
Social Skills Groups: Student social skills groups: assisted groups of students with social skills (i.e. students with ADHD; high-functioning autism) in increasing prosocial behavior (e.g., taking turns) and emotion regulation. Adult social skills groups: assisted group discussions on topics such as anger management, communication, or interpersonal relationships. (since 2016)
Other: Weekly volunteer work with students, psychological assessment transcriptions (i.e. TAT, CAT, HTP, Rorschach, KFD), speech-language therapy class assistant, English-speaking client interpreter. (since 2016)
Supervisor: Curie Park, PhD

2015.04 – 2016.02 **Volunteer, Seoul National University Hospital (Seoul, Korea)**
Daytime Care Center for Children with Developmental Disorders:
Worked as an undergrad volunteer to help children diagnosed with developmental disorders (ASD/PDD-NOS). Class was formatted to help children prepare for elementary school the following year. Helped children

work on their motor skills (i.e., fine and gross), cognitive skills, and social skills and interaction.

Research Experience

2021 – 2025	**Research Assistant, PEAK Project (PIs: George DuPaul & Lee Kern)** Interventionist delivering parent behavior training intervention (face-to-face parent groups, and online follow-ups) to parents with children 3-5 years old who have been identified to be at risk for ADHD. Additionally involved in participant recruitment, eligibility assessment (e.g., Barkley, DAS), project assessments (IGDIs for early literacy and numeracy, TEMA-3 for early math, Head Toes Knees Shoulders (HTKS) for self-regulation skills), and data management.
2021 – 2022	**Research Assistant, Telepresence Robot Project (PI: George DuPaul)**
2018 – 2019	**Research Assistant, Reexamination of "Korean Bullying" using Big Data Analysis and Cross-comparative Research, Collaborative Research Grant, National Research Foundation of Korea (PI: Yoonsun Han).** Contributed to organizing general structure of the research paper; Synthesized literature on subjective wellbeing of children, effects of risk factors on child wellbeing, and child rights; drafted introduction, literature review, and discussion; designed and presented poster at academic conference (SSWR).
2018 –2019	**Research Assistant, Analysis and Development of an Educational Program for Adolescent Users of Social Network Services, Young Female Scientist Researcher Grant, National Research Foundation of Korea (PI: Yoonsun Han).** Assisted drafting introduction, literature review, and discussion of a research paper about online and offline bullying typologies; edited manuscript for English fluency and overall cohesion.
2017 – 2019	**Research Assistant, Assessment of Social Skills and Educational Program for Children and Adolescents of Borderline Intellectual Functioning, Social Impact Bond Assessment, Seoul City (PI: Yoonsun Han).** Managed distribution and collection of Achenbach's Teacher Report Form for 100 borderline intellectual functioning children living in group homes; cleaned and managed data for analysis.

2017 **Research Assistant, Assessment of Social Skills and Educational Program for Children and Adolescents of Borderline Intellectual Functioning and Their Caregivers, Korea Human Resource Development Institute for Health & Welfare Grant (PI: Yoonsun Han).**
Assisted writing literature review of borderline intellectual functioning, and the Wechsler IQ test; analyzed statistical results; participated in and transcribed a focus group interview with child instructors concerned about the process and outcome of the intervention program for institutionalized students with borderline intellectual functioning; designed and presented poster at academic conference (SSWR).

2015 – 2017 **Member, Undergraduate Student Clinical Psychology Association, Sungkyunkwan University, Seoul, Korea**
Conducted (undergraduate) student-led group research in APA style and presented at the Sungkyunkwan University's Psychology Day Event
Effect of rejection sensitivity and rumination on depression among university students: concentrating on the moderation effects of rumination. (2015).
Effect of perfectionism on social anxiety: investigating the mediating effect of intolerance of uncertainty. (2016).

Publications

Jung, H., DuPaul, G. J., Anastopoulos, A. D., & Weyandt, L. L. (Manuscript in preparation). *Latent profiles of risky behaviors for college students with and without ADHD.*

Rosenthal, E., Franklin-Gillette, S., **Jung, H. J.**, Nelson, A., Evans, S. W., Power, T. J., Yerys, B., Dever, B., Reckner, E., & DuPaul, G. J. (2022). Impact of COVID-19 on youth with ADHD: predictors and moderators of response to pandemic restrictions on daily life. *Journal of Attention Disorders, 26*(9), 1223-1234.

Park, J., **Jung, H.** & Han, Y. (2022). Latent profile analysis of associations among children's risk profiles, rights, and subjective well-being across 16 countries. *Current Psychology.* https://doi.org/10.1007/s12144-022-02916-3

Kim, B. K., Park, J., **Jung, H. J.**, & Han, Y. (2020). Latent profiles of offline/cyberbullying experiences among Korean students and its relationship with peer conformity. *Children and Youth Services Review, 118*, 105349.

Book Chapters/Reports

Ariol, M., Morse, S., **Jung, H.**, & DuPaul, G. J. (In production). Digitally delivered behavioral parent training programs. In T. Del Vecchio & M. Terjesen (Eds.) *Handbook of behavioral parent training.* American Psychological Association.

Han, Y., Park, H., **Jung, H.**, Kang, H., & Lee, Y. (2017). *Independent support system research on children with borderline intellectual functioning: report on the effectiveness of independent support service for children with borderline intellectual functioning.* Seoul: Independent Support Group for Children, Ministry of Health and Welfare, South Korea.

Han, Y., Park, H., **Jung, H.**, Kang, H., & Lee, Y. (2017). *2014 – 2017 Borderline intellectual functioning children and adolescents support project: survey on participant children.* Seoul: Independent Support Group for Children, Ministry of Health and Welfare, South Korea.

Presentations

PAPER

Morse, S., Ariol, M, **Jung, H.**, Lam, J., Dever, B., DuPaul, G. J., & Kern, L. (2026, February) Effects of ADHD and Behavioral Regulation on Preschool Academic Development. Paper presentation accepted for the National Association of School Psychologists (NASP) 2026 Annual Convention, Chicago, IL, USA.

Jung, H. J. & DuPaul, G. J. (2022, February). Latent risk profiles of college students with and without ADHD. Paper presented at the National Association of School Psychologists (NASP) 2022 Annual Convention, Boston, MA, USA.

Ahn, J. H., Gross, Y., **Jung, H. J.**, & DuPaul, G. J. (2022, February). Rendered invisible: mental health needs of Asian American Students. Paper presented at the National Association of School Psychologists (NASP) 2022 Annual Convention, Boston, MA, USA.

Chunta, A., **Jung, H. J.**, Zimmerman, C. E., & DuPaul, G. J. (2022, February). Self-regulation and social behavior differences in preschoolers at risk for ADHD. Paper presented at the National Association of School Psychologists (NASP) 2022 Annual Convention, Boston, MA, USA.

POSTER

Jung, H., Rosenthal, E., DuPaul, G. J., Kern, L., & Dever, B. (2024, November). Helping parents feel competent: family empowerment for parents with children with/at-risk for ADHD in behavioral parent training with optimistic parenting. Upcoming poster presentation at the Association for Behavioral and Cognitive Therapies (ABCT) 2024 Annual Convention (Philadelphia, PA).

Jung, H. J. & DuPaul, G. J. (2023, August). Family-centered care and resilience moderate link between pediatric diabetes and parent stress. Poster presented at the American Psychological Association (APA) 2023 Convention, Washington DC, USA.

Jung, H. J., Shi, C., Dever, B., Kern, L., & DuPaul, G. J. (2023, August). Parenting stress moderates link between ADHD-related behaviors and parent attribution of their child.

Poster presented at the American Psychological Association (APA) 2023 Convention, Washington DC, USA.

Ahn, J. H., **Jung, H. J.**, & DuPaul, G. J. (2022, August). Psychosocial impact of COVID-19 and discrimination on Asian American youths and families. Poster presented at the American Psychological Association (APA) 2022 Convention, Minneapolis, MN, USA.

Jung, H. J. & Han, Y. (2021, February). The moderating effect of latent school climate profiles in the relationship between self-control and school adjustment. Poster presented at the 2021 Virtual Conference for National Association of School Psychologists.

Jung, H., Park, J., & Han, Y. (2019, January). Typologies of risk factors and children's subjective well-being across 16 countries. Poster presented at the 2019 biennial meeting of Society for Social Work and Research, San Francisco, CA, USA.

Park, H., **Jung, H.**, Kang, H., Lee, Y., & Han, Y. (2019, January). The effectiveness of individualized interventions on institutionalized children with borderline intellectual functioning. Poster presented at the 2019 biennial meeting of Society for Social Work and Research, San Francisco, CA, USA.

Jung, H., Lee, Y., & Han, Y. (2018, April). The effect of school bully victimization on self-esteem among Korean multicultural adolescents: the mediating effect of ethnic identity. Poster presented at the 2018 International Conference on Education, Psychology, and Learning, Nagoya, Japan.

Honors and Awards

2020.09 – 2021.08	**Presidential Fellowship, Lehigh University, Bethlehem, PA**
2017.09 – 2019.08	**Graduate School University Scholarship, Sungkyunkwan University, Seoul, Korea** Merit-based scholarship awarded to academically exceptional students upon admission to the graduate program
2019.01	**Brain Korea (BK) Scholarship, Sungkyunkwan University, Seoul, Korea** Merit-based scholarship awarded to graduate students based on their research performance, calculated by publications and conference presentations
2018.11	**Simsan Scholarship, Sungkyunkwan University, Seoul, Korea** Merit-based scholarship awarded to students based on academic excellence, research performance, and contribution to the department
2013.08, 2016.08	**Academic Scholarship, Sungkyunkwan University, Seoul, Korea**

Other Leadership Experiences

2025.08 – Present	*Nemours Children's Health – Psychology Resident Class Representative*

2023.07 – 2024.07	*Network of Campus Representatives (NCR) program for the Society of Pediatric Psychology (SPP)*
2022.08 – 2023.05	*National Association of School Psychology – Lehigh University Student Leader (Ph.D. representative)*

Languages

Korean	Native Language
English	Fluent in Reading, Listening, Speaking, Writing

References

George J. DuPaul, Ph.D.
Academic Advisor, Lehigh University
111 Research Drive
Bethlehem, PA 18015
610-758-3252, gjd3@lehigh.edu

Additional clinical references available upon request