

The Impact of Social Determinants of Health on Attention-Deficit/Hyperactivity Disorder  
Symptoms and Functioning: A Qualitative Study

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## **Abstract**

Attention-deficit/hyperactivity disorder (ADHD) is one of the most researched disorders in children (Goldman et al., 1998; Polanczyk et al., 2007). Socioeconomic disadvantage and other unmet needs are strong risk factors for the emergence of ADHD as early as preschool years (Spencer et al., 2021). ADHD symptoms exhibited in preschool years have been shown to be chronic and stable over time, demonstrating the need for early and appropriate treatment (Posner et al., 2007). Social determinants of health (SDH) including—housing instability, food insecurity, quality of childcare—lead to increased risk of ADHD (Russell et al., 2016). There is a gap of knowledge in the degree to which SDH impact ADHD symptoms and functioning. In a recent quantitative study, Spencer and colleagues (2021) found that the association between SDH and ADHD symptoms was fully mediated by caregiver well-being (defined as: mental health, physical health, employment status). Using a social-ecological framework, the current qualitative study is designed to gain a deeper understanding of the relationship between SDH and ADHD symptoms and functioning. The goal of this mixed methods data triangulation strategy is to ultimately inform adaptation of an intervention (PRECARE) targeting potentially modifiable SDH to improve emerging ADHD symptoms in preschool-age children. Twenty-three interviews were conducted with parents of preschool aged children with emerging ADHD symptoms. Thematic analysis of the qualitative interviews demonstrated that the presence of resources alone did not reduce ADHD symptoms or relieve parental stress/anxiety. Resources needed to be high-quality to alleviate ADHD symptoms and improve parent well-being.

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# **The Impact of Social Determinants of Health on Attention-Deficit/Hyperactivity Disorder**

## **Symptoms and Functioning: A Qualitative Study**

One of the most common chronic disorders of childhood is attention-deficit/hyperactivity disorder (ADHD) (Polanczyk et al., 2007). In 2016, an estimated 6.1 million children (i.e., 2-17 years old) in the United States had ever received a diagnosis of ADHD. Of the 6.1 million, 5.4 million currently had ADHD, which was 8.4% of all the United States (Danielson et al., 2018). ADHD consists of pervasive symptoms of inattention, hyperactivity and impulsivity (Polanczyk et al., 2007). In 2011, clinical practice guidelines of the American Academy of Pediatrics recommended that diagnosis and treatment of ADHD could begin as early as four years of age—other studies suggesting as early as three (Dreyer, 2006; Lahey et al., 2016). Rowland and colleagues (2018) found that socioeconomic status and parental history of ADHD are significant risk factors that interact to influence the prevalence of ADHD. ADHD symptom severity, worse outcomes, and ADHD diagnoses have been associated with a wide range of social, economic and environmental stressors for children and families including, but not limited to, the following: low income, food insecurity, single-parenthood, low parental education, prenatal smoking, housing instability, and familial mental illness (Polanczyk et al., 2007; Spencer et al., 2021).

There is a gap in literature as to how specific SDH impact ADHD symptoms and functioning in young children. SDH are the social and economic factors, apart from medical care, that shape the health and well-being of individuals (Braveman and Gottlieb, 2014). The World Health Organization (WHO) defined SDH as the “conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life.” These systems and forces include economic policies, social norms, social policies, and political systems. There is a need for early intervention to address social, economic, and environmental stressors. Targeting SDH could influence ADHD trajectory for emerging

symptoms. Addressing and alleviating unmet needs may improve clinical outcomes and ADHD symptoms by reducing parental stress, empowering parents, and improving connection to mental health care. Identifying various SDH is crucial in order to provide children and families with optimal intervention and treatment.

In a recent study, using data from the 2016 National Survey of Children, Spencer and colleagues (2021) found that caregiver well-being (defined as: mental health, physical health, employment status) fully mediated the association between SDH (defined as: socioeconomic status, caregiver well-being, access to basic needs) and ADHD symptoms of preschool-age children (3-5 years old). The implications from these significant findings indicate that SDH are tied to a child's ADHD symptoms through caregiver well-being. Thus, addressing caregiver well-being and unmet needs could address emerging ADHD symptoms. The current study, framed by the social-ecological model (SEM), uses in-depth interviews from primary caregivers of children with ADHD symptoms to replicate and/or expand on previous findings; the impact of SDH on ADHD symptoms and functioning for young children.

### **Social-Ecological Model**

The social-ecological (SEM) was first introduced, by Urie Bronfenbrenner, as a conceptual model for understanding human development in the 1970's (Kilanowski, 2017). This model looks directly at development within the context of the multiple systems that form the individual's environment (Paquette & Ryan, n.d.). According to the framework of SEM, an individual's immediate environment is impacted by the interaction with the larger environment. Thus, an individual's development is impacted by both immediate relationships (e.g., family), as well as larger environmental systems (e.g., social, cultural, political). As a result, SEM has several interacting systems: microsystem, mesosystem, exosystem, macrosystem, and chronosystem.

All systems interact, which impacts the development of an individual. The microsystem is the system closest to the individual, and encompasses the relationships and immediate surroundings (Kilanowski, 2017). The mesosystem provides the connection between the structures in an individual's environment—school, work, and neighborhood (Paquette & Ryan, n.d.). The exosystem does not directly impact the individual, but the structures in this layer impact development by interacting with structures within the microsystem. Examples include social networks and community contexts (e.g., community-based resources). The macrosystem is comprised of the societal, religious and cultural values—these factors have a cascading effect throughout all other layers (Kilanowski, 2017); (Paquette & Ryan, n.d.). The chronosystem encompasses the internal and external elements of time and historical content as it relates to an individual's environment (Kilanowski, 2017). While all systems interact and are equally important, the current study focuses largely on the interaction between the microsystem, mesosystem and exosystem.

SEM is a framework for understanding the interactive effects of personal and environmental factors (Kilanowski, 2017). In addition, the framework emphasizes that an individual's health is affected by the interaction between the characteristics of the individual community and the environment, which includes physical, social and political components (Kilanowski, 2017). A systems approach is suitable for the current research given the focus on the interactions and relationships between parts in order to understand the whole. The current research, guided by the SEM framework, brings to the forefront the many facets of each system that contributes to the impact of SDH on ADHD symptoms and functioning.



## Parent Well-Being

Parents<sup>1</sup> faced with the tasks of providing for children with psychological health problems can face significant challenges. These challenges include, but are not limited to, greater time demands, higher medical costs, lower incomes, childcare challenges, and employment constraints (Brehaut et al., 2011). Previous research has indicated that these challenges facing caregivers also have implications for caregiver health (Breslau, Staruch, and Mortimer, 1982; Gowen et al., 1989; Burton and Phipps, 2009; Brehaut et al., 2004; Beckman, 1983; McKinney and Peterson, 1987; Dyson, Edgar, and Crnic, 1989; Frey, Greenber, and Fewell, 1989). These previous findings are supported by Spencer and colleagues' (2021) quantitative findings. Using Exploratory Structural Equation Modeling (ESEM), they examined whether three factors—socioeconomic status, access to basic needs, caregiver well-being—from the SDH model predicted ADHD symptoms, while controlling for age and gender. Caregiver well-being fully mediated the relationship between socioeconomic status and ADHD symptoms and the relationship between access to basic needs and ADHD symptoms (Spencer et al., 2021).

Prior to Spencer and colleagues' (2021) findings, Brehaut and colleagues (2011) examined self-reported caregiver health over a ten-year period. Findings indicated that self-reports of worse caregiver health (i.e., poorer general health and more depressive symptoms) were associated with child health complexity over time. These findings suggest that caregiver health was negatively impacted by a child's increased complexity of health problems. Further analysis indicated that there were significant differences in trajectories at the individual level for caregiver health (Brehaut et al., 2011). Thus, individual life events (e.g., receiving a diagnosis) could impact the overall trajectory of caregiver health. Brehaut and colleagues' (2011), as well as

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<sup>1</sup> I choose to use the word parent, rather than caregiver, to refer to the child's main guardian. I define the term parent as 'the primary guardian/caregiver' of the child.

Spencer and colleagues' (2021) findings, show the need to explore individual life events, and specific child health problems that may impact caregiver health.

## **ADHD**

ADHD is one of the most common cognitive, behavioral and emotional disorders in childhood (Spencer, Biederman, and Mick, 2007). Literature supports the stability of ADHD symptoms, or a variation of these symptoms, into adulthood in many cases; between 30% to 70% of those with a diagnosis in childhood will continue to experience symptoms into adulthood (Spencer et al., 2007; Russell et al., 2016). Data indicates that children with ADHD are at risk for the development of other psychiatric difficulties, as well as struggling with mood, anxiety and substance use disorders (Spencer et al., 2007). According to Russell and colleagues' (2016) work, ADHD is a functionally impairing for many children, and has been known to increase poor outcomes throughout the stages of life. Due to the known impact ADHD has on children's daily functioning, development, and life outcomes it is important to understand factors that contribute to disorder progression and worsening symptoms.

### ***ADHD Etiology***

There is significant evidence that ADHD is highly heritable. Twin studies, in school aged children, indicate that about 75% to 80% of the origin of ADHD can be explained by genetics (Dreyer, 2006). Similarly, in an adoption study, adoptive parents and siblings of ADHD children had low rates of ADHD (6% to 8%), whereas biological parents and siblings had higher ADHD rates (approximately 18% to 31%) (Dreyer, 2006). While there are a number of etiological studies of ADHD in school-aged children, fewer studies look at preschool-aged children (Dreyer, 2006). In a twin study with 2 to 4-year-old children, there were 70% to 80% ADHD heritability rates (Dreyer, 2006). This suggests that ADHD is highly heritable in younger children, and hyperactive and inattentive behavior is observable in young children (Dreyer, 2006). In a study

of preschool children diagnosed with ADHD, neuroimaging revealed impairment in subcortical brain regions. Exposure to adverse environmental factors may interact with these biological factors, together contributing to the disorder (Kaplan and Adelman, 2011). Although there is strong evidence for heritability of ADHD, the biopsychosocial model illustrates both genetic as well as environmental interaction lead to increased risk of ADHD (Dreyer, 2006; Russell, Ford, Williams, and Russell, 2016). Dreyer and colleagues (2006) noted that environmental and biological factors, such as complications of pregnancy—including prematurity and maternal smoking during pregnancy, play a significant role in ADHD presentation (Dreyer, 2006). Supported by the social-ecological framework, it appears that genetics as well as environmental factors play interacting roles, which contribute to development of ADHD. There is no simple causal explanation for ADHD etiology.

As one of the most common pediatric disorders, ADHD disproportionality affects socioeconomically disadvantaged children (Russell, Ford, Williams, and Russell, 2016). Socioeconomic disadvantage has been previously linked to a wide range of poor health outcomes throughout the lifespan (Russell, Ford, Williams, and Russell, 2016). The interactionist model of socioeconomic inequalities suggests that those with psychological illness are more at risk for being of low socioeconomic status (SES; Russell, Ford, Williams, and Russell, 2016). As a result, children of individuals with low SES are brought up in a disadvantaged environment leading to increased vulnerability to psychological difficulties such as ADHD (Russell, Ford, Williams, and Russell, 2016). In reverse, children with ADHD may also impact the family environment. For example, the demands of taking care of a child with ADHD may lead to a parent giving up their job, leading to a decrease in SES (Russell, Ford, Williams, and Russell, 2016; Brown et al., 2017). Thus, Russell and colleagues (2016) found that SES disadvantage may lie on the causal pathway or be a result of ADHD in childhood.

Exposure to traumatic occurrences in childhood, may increase a child's risk of unhealthy mental development. Some children may even manifest disruptive behaviors, impulsivity, and other characteristics of ADHD (Brown et al., 2017). A national study showed children with parent-reported ADHD, had higher prevalence of traumatic experiences compared with children without ADHD (Brown et al., 2017). Adverse SDH—low income, low parental education level, food insecurity, single-parenthood, prenatal smoking, and familial mental illness—are associated with diagnoses of ADHD, as well as symptom severity and worse outcomes (Brown et al., 2017; Spencer et al., 2021). For example, children from families whose mothers or fathers have limited educational qualifications are more likely, on average, to have ADHD or ADHD symptoms than peers with highly educated parents (Russell, Ford, Williams, and Russell, 2016). Melchior and colleagues (2012) concluded that food insecurity for preschoolers predicted inattention and hyperactivity in grade school. In a similar vein, Rowland and colleagues (2018) found that socioeconomic status (SES) and parental history of ADHD are strong interacting factors that affect the prevalence of ADHD. The studies above support the systems framework, demonstrating the impact of multiple environmental systems on the development of ADHD. These studies indicate that SDH is associated with ADHD, affecting overall disorder progression and symptom development.

Given the impact environmental factors have on ADHD symptom onset and progression, it may be necessary for a comprehensive examination of all factors that could contribute to the child's ADHD (Brown et al., 2017). This is important to distinguish symptoms of ADHD from those that may solely be related to traumatic experiences/stress (Brown et al., 2017). Failure to identify adverse experiences and SDH may result in ADHD treatment that is focused on managing present behaviors, but little to manage underlying unmet needs (Brown et al., 2017). It may be necessary for ADHD diagnosis and treatment to consider wider familial and community-

level adversities potentially affecting the child (Brown et al., 2017). While there is no simple causal explanation between ADHD and environmental factors, ADHD has a significant impact on children, families, schools, and other environments that it is important to examine potential preventative strategies (Russell et al., 2016). Establishing an understanding of the relationship between SDH and ADHD symptoms is the first step in forming and adjusting preventative and accessible, developmentally age-appropriate treatment strategies.

### ***ADHD Diagnosis***

It is important to have appropriate diagnostic criteria to assess disorder symptoms to meet treatment needs and provide care (Ghanizadeh, 2013). The publication of the DSM-III brought a major shift in the understanding of ADHD. Previously, only hyperactivity and impulsivity were established as hallmarks of the disorder. With the publication of the DSM-III, symptoms of inattention were emphasized as a significant component of the disorder. In the current edition of the DSM-V, ADHD is characterized by a certain degree of inattentiveness, distractibility, impulsivity, and hyperactivity that is developmentally inappropriate. The complexity of ADHD has continued to evolve and the DSM-V now defines three subtypes of ADHD; predominantly inattentive, predominantly hyperactive-impulsive, and combined type (Spencer et al., 2007; DSM-5; American Psychiatric Association, 2013). Individuals who are diagnosed with combined type meet both inattentive and hyperactive diagnostic criteria. Several inattentive or hyperactive-impulsive symptoms must be present before age 12 and are not better accounted for by another psychiatric disorder such as anxiety disorder or mood disorder (DSM-5; American Psychiatric Association, 2013).

Presentation of ADHD changes with development, and thus the application of a single list of symptoms assigned to all ages may not be appropriate given changing presentation. For example, preschoolers are far more likely to be active, fidget and squirm than older children. In a

study by Byrne and colleagues (2000), results indicated that several hyperactive/impulsive symptoms were often endorsed for children with and without ADHD, which suggests high sensitivity and low specificity of these items. ADHD presentation in school age children tends to endorse the inattentive subtype, while this subtype is rarely found in preschool-age children (Kaplan and Adelman, 2011). However, Lahey and colleagues (2004) found that children 4-6 years old who met full diagnostic criteria were likely to continue to meet criteria and experience greater functional impairment over time.

While hyperactivity/impulsivity are typical symptoms associated with ADHD, it may be a less appropriate marker in preschool-age, than in older children (Curchack-Lichtin et al., 2014). Curchack-Lichtin and colleagues (2014) found that certain behaviors in the DSM-IV diagnostic criteria for preschool-age children, were less applicable in non-academic settings. ADHD symptoms presenting during pre-school age may not clearly separate into categories consistent with diagnostic subtypes at this age—there may be age specific developmental differences in the presentation of ADHD (LaForett, Murray, and Kollins, 2008). One concern is that symptoms of ADHD in preschool years may not necessarily require a label or treatment (Lahey et al., 2016). With the absence of age-specific guidelines, there is ambiguity as to what behaviors are considered normative versus pathological. Thus, determining appropriate diagnosis for a child at preschool-age can be complicated and may require further research to establish appropriate diagnostic criteria.

**Pre-Diagnosis.** The DSM-V specifies that a diagnosis in childhood may be made if children have six of nine inattentive and/or hyperactive/impulsive behavioral characteristics (DSM-5; American Psychiatric Association, 2013). However, DSM-V behavioral criteria are mainly descriptors of ADHD as it presents during school-age years—children at pre-school age (4-5 years) comprised only 25% of the field study sample (Curchack-Lichtin et al., 2014). Young

preschool children, ages two-four, are challenging to diagnose. Clinicians face the task to distinguish between children who may develop persistent ADHD versus those who exhibit ADHD-like symptoms (Gurevitz, Geva, Varon, and Leitner, 2014). Establishing symptom criteria to allow for early diagnosis or a ‘pre-diagnosis’ of ADHD, is important for clinical and practical implications—this may allow for early interventions at a critical period, ultimately diminishing symptom severity and functional difficulties that may develop over time (Gurevitz et al., 2014).

Despite the need, there are few studies that aim to identify potential early clinical markers of ADHD in preschool-age children. Gurevitz and colleagues’ (2014) research found early clinical markers predictive for development of ADHD, the most significant being; head growth rate, delays in motor development, delays in speech and language, and behavioral difficulties. Head growth rate in the control group of children was almost constant from birth to 18 months, while head growth rate of children in the ADHD group slowed down during birth to 18 months (Gurevitz et al., 2014). Developmental delays in speech and language have been previously reported in association with development of ADHD. Gurevitz and colleagues (2014) found that one-third of infants from the ADHD group experienced delay in speech development at nine months, and two-thirds experienced a delay in speech and language development at 18 months. Temperament and behavior problems at nine and 18 months are relevant predictive factors; excessive crying during infancy was followed by later problems in attention and behavioral development (Gurevitz et al., 2014; DeSantis, Coster, Bigsby, & Lester, 2004). These markers can serve as a clinical profile used by clinicians to predict ADHD development, enabling early intervention.

The importance of the implementation of early intervention is the ability to diminish expected future complications and emerging ADHD symptoms. Early intervention acts as a

preventative step for worsening ADHD symptoms and provides children with resources at a young age. If there is no available early intervention in school or at home, preschool-age children's behaviors typically continue and may escalate in an elementary school setting. Persisting ADHD symptoms can result in expulsion from school, difficulty maintaining childcare, and caregivers having to miss work and personal time (Barkley, 2006; Tandon, Si, and Luby, 2011). Parent-training as well as behavioral interventions may be beneficial, although there are relatively few studies that have examined treatment outcomes for preschool-age children with ADHD (Tandon, Si, Luby, 2011). Studies that have explored preschool treatment outcomes have various methodological flaws; small sample sizes, lack of consistent inclusion criteria, and data not collected in a preschool setting (McGoey, Eckert, and DuPaul, 2002; Barkley et al., 1988; Cunningham et al., 1985; Mayes et al., 1994). In addition, attempting to create empirically supported interventions for older children with ADHD fails to address the developmental differences of preschool-age and school-age children (Tandon, Si, Luby, 2011). There is limited research for clinicians to guide the pre-diagnoses and treatment of preschool-age children.

### ***Preschool-Age Children with ADHD***

There is a dearth of information on the long-term consequences and stability of ADHD when diagnosed at a young age (Lahey et al., 2016). In a sample of school-aged children diagnosed with ADHD, mothers provided reports indicating that the onset of symptoms occurred on or before the fourth birthday in 66% of the children. It is likely that ADHD symptoms begin to present in preschool-age children, which means in children as young as two years (Dreyer, 2006). Less is known about the criteria for diagnosing ADHD in preschool-age children, which may be due to the variability of normal developmental progression. A child's behavior in younger years is much more variable than in older school-age children, and often it is up to the



clinician to fully determine whether the observed or reported behaviors are developmentally appropriate for a preschool-age child or representative of ADHD (Dreyer, 2006). For preschool-age children, certain DSM-V diagnostic criteria are difficult to assess with children who may not be engaged in specific tasks or activities. For example, on DSM-V diagnostic criteria, “Often makes careless mistakes” are typically associated with activities that require focused attention, such as homework or tests (5th ed.; DSM–5; American Psychiatric Association, 2013). Thus, symptoms of inattention may be hard to assess in preschool-age children who are not typically required to pay careful attention or participate in tasks that require sustained attention (Curchack-Lichtin et al., 2013). Inconsistency in preschool-age diagnoses of ADHD, as well as the variability of presentation of ADHD symptoms in this age group makes it challenging to establish appropriate treatment for preschoolers.

**ADHD Treatment for Preschoolers.** In clinical samples, research has demonstrated that earlier onset of ADHD is associated with higher rates of functional difficulties, which includes risky/unsafe and aggressive behavior (LaForett, Murray, and Kollins, 2008). In their community study, LaForett, Murray and Kollins (2008) found that 15% of preschoolers diagnosed with ADHD were suspended from preschool or daycare. Preschool-age is a period of rapid neuronal maturation and social growth; developing the capacity to sustain attention, inhibit behavior, and emotional regulation (LaForett, Murray, and Kollins, 2008; Ghuman, Arnold, and Anthony, 2008). The process of maturation for these various developmental abilities may be mistaken as ADHD symptoms for preschool-age children. As a result, it may become challenging for clinicians, teachers, as well as parents to decide whether to diagnose and/or treat children early or wait until a child grows older—although, intervening at a young age is beneficial for treating ADHD symptoms (LaForett, Murray, and Kollins, 2008; Curchack-Lichtin et al., 2014).

Effective psychosocial treatments for ADHD must account for preschoolers' emerging developmental abilities and inabilities; for example, it may be difficult for preschoolers to understand how their behaviors affect others (LaForett, Murray, and Kollins, 2008). Parent training and behavior interventions are evidence-based first-line treatment for preschool-age children with ADHD. Common parent training programs include Triple P-Positive Parent Programing, Parent-Child Interaction Therapy, New Forest Parenting Program (Klein and Tazkarji, 2013). The implementation of parent training during preschool years may ameliorate developmental trajectories seen in some preschool-age children with ADHD (LaForett, Murray, and Kollins, 2008). These evidence-based trainings may be particularly helpful to parents of children with ADHD experiencing high stress and low parenting self-confidence, which is likely related to the high demands of caring for a preschool-age child with ADHD (LaForett, Murray, and Kollins, 2008).

Psychopharmacological treatments are also available for preschoolers with ADHD, although use of medication comes with additional risk factors. Methylphenidate and amphetamines are front line stimulant medications used to treat ADHD in school-age children (LaForett, Murray, and Kollins, 2008). Limited research has been conducted on the efficacy of stimulant medication use in preschool-age children. The Preschool ADHD Treatment Study (PATs) was a huge milestone for assessing the efficacy of medication use in preschool-age children. Results suggested significant improvement in ADHD symptoms with the use of stimulant medication Methylphenidate (MPH) (Ghuman et al., 2007; LaForett, Murray, and Kollins, 2008). Although results indicated improvement, preschoolers experienced a multitude of side effects including appetite loss, trouble sleeping, stomachaches, social withdrawal, and higher rates of emotional side effects (e.g., irritability) than school aged children (LaForett, Murray, and Kollins, 2008). While there is evidence of the benefits of stimulant medication in

preschool-age children, preschool children may be at higher risk for some side effects and risks may outweigh the reward (LaForett, Murray, and Kollins, 2008). A multi-modal approach to treatment, psychopharmacological and therapy, may be the most beneficial approach for young children with ADHD.

**The Impact of Preschool ADHD on Teachers, Families, and Practitioners.** Due to the nature of ADHD behaviors, preschool-age children with ADHD may have difficulties navigating a preschool setting. This makes it challenging for children at this age to practice preacademic skills, social skills, and become adjusted to the structure/routine of school (McGoey, Eckert, and DuPaul, 2002). Early interventions that work on improving ADHD symptoms would help prepare children for kindergarten and elementary school. While there is a significant amount of research on successful intervention for school age children, preschool-age children are developmentally different from school-age children—as a result, interventions designed for older children, may not be effective for preschool-age children (McGoey, Eckert, and DuPaul, 2002). If no early interventions are placed in school or at the home, preschool-age children’s behaviors will likely continue and escalate in elementary school settings. The lack of empirical research, and successful treatments/interventions for preschool-age children with ADHD leaves teachers and families in a dilemma. Teachers may be left to develop their own unique treatment plans, and in some cases the child may have no treatment plan. Due to the lack of trained educational staff, children may not continue to attend the school—in some cases children may be asked to leave. Not having the proper training to work with children who need educational accommodations puts a strain on staff and effects the overall dynamic of the classroom. It becomes very challenging for children to attend school when teachers are not trained to work with the child and their ADHD symptoms or develop educational accommodations. This not only

impacts the child's education, but also the family dynamic; if the child is unable to attend school or is asked to leave, the parent(s) may have to alter their schedule.

While there are a multitude of treatment options for children with ADHD some families may not have access to treatment information, or the resources to navigate different treatment options. It's important that clinicians not neglect counseling families on treatment options, since preschool-age children with ADHD are at increased risk for adverse outcomes (Kaplan and Adesman, 2011). Disparities in access to treatment is a significant barrier for families with preschool-age children with ADHD. While parent training and behavioral interventions are front-line treatments for young children with ADHD, these programs require a significant amount of time and effort that many families may not have (Kaplan and Adesman, 2011). Parent training programs require attention and consistency; a lack of availability may result in unsuccessful treatment. Properly trained professionals for these treatment programs may also not be available within a reasonable distance from the family's home (Kaplan and Adesman, 2011). Training and behavioral interventions/programs are also quite costly, and many families may be unable to afford these treatments. For example, households may have health insurance policies with inadequate mental health coverage making treatment unaffordable. The inaccessibility of ADHD treatment programs is concerning given that socioeconomic disadvantaged families are at higher risk for having a child with psychological illness or poor health outcomes (Russell, Ford, Williams, and Russell, 2016; Brown et al., 2017).

There is a dearth of information on the clinical impact of preschoolers' emerging ADHD symptoms on practitioners. However, the current study will help to inform practitioners of the importance of a pre-diagnostic process and a holistic approach. It is imperative to look at SDH in emerging symptoms of ADHD. Practitioners must address unmet needs and resources, which will impact how practitioners can best support families. Creating space for accessible treatment

for all families with a child with ADHD is a necessary next step in ADHD related research. New approaches, particularly those incorporating resources for high need families, are needed. Due to the high prevalence of ADHD symptoms presenting in preschool-age children, it's important for research to focus on factors that may influence disorder progression. Targeting these existing factors at a young age may be key to preventing worsening or progressing ADHD symptoms.

## **Previous Studies**

### ***Quantitative Study***

In a previously published study, Spencer and colleagues (2021) explored the association between SDH and ADHD symptoms in a national sample of preschool-age children (3-5 years old), using exploratory structural equation modeling. Researchers aimed to model the associations between SDH—including modifiable environmental and family risk factors—and emerging ADHD symptoms. Spencer and colleagues (2021) were specifically interested in SDH that could be modified with a primary-care based intervention (e.g., need for food, childcare, education, etc.) by connecting families with community programs and resources. The structural equation model allowed researchers to examine individual SDH and individual ADHD symptoms, as well as potential mediators of the association between ADHD symptoms and SDH (Spencer et al., 2021). For the purpose of the SDH model, variables included the following: percentage of federal poverty level; primary caregivers' education level; number of parents living at home (biological or adoptive); primary caregivers' employment status; physical health of primary caregivers; mental health of primary caregivers; difficulty accessing basic needs; difficulty affording food; difficulty accessing needed healthcare (Spencer et al., 2021). These variables of SDH were divided into three factors: socioeconomic status, caregiver well-being, and access to basic needs. Researchers examined whether each of the three factors from the SDH model predicted ADHD symptoms, controlling for age and gender.

Previous studies have demonstrated that ADHD disproportionately affects socioeconomically disadvantaged children, but for uncertain reasons (Brown et al., 2017; Melchior et al., 2012; Russell et al., 2016). Spencer and colleagues' (2021) results demonstrated that for a national sample of preschool-age children, worse caregiver well-being (physical health, mental health, and employment status) acts as a mediator in the relationship between SDH and ADHD symptoms. Caregiver well-being fully mediated the relationship between socioeconomic status and ADHD symptoms, and the relationship between access to basic needs and ADHD symptoms (Spencer et al., 2021). There are several plausible explanations for the relationship between SDH and ADHD symptoms demonstrated in this particular model.

A possibility for these findings is that worse caregiver health may decrease the amount of time a caregiver spends with their child—leading to, or worsening ADHD symptoms. Support for this possibility comes from Russell and researchers' (2016) study, which found that parent involvement partially mediated the association between ADHD diagnosis and socioeconomic disadvantage (financial difficulty, living in public housing, single mothers) in a longitudinal study. An additional possibility is that ADHD symptoms in preschool-age children negatively impacts caregiver health, resulting in a reduced likelihood of employment (Spencer et al., 2021). Flood and colleagues' (2016) findings support reduced likelihood of parental employment—caregivers who had a child with ADHD experienced a change of job, or loss of employment status. These findings indicate that the ability to maintain a consistent earned income may be impacted by child ADHD symptoms—which in turn impacts the ability to pay for needed resources. This quantitative study established that addressing caregiver well-being in preschoolers with ADHD symptoms could be extremely important and act as a strategy for early intervention. In addition, early interventions could target these SDH factors, which may help to prevent worsening disorder progression for emerging symptoms in preschool-age children.

While findings are significant, Spencer and colleagues (2021) study is cross sectional data; therefore, additional studies are necessary to further understand the relationship as well as any potential additional factors impacting SDH and ADHD symptoms. In order to further explore the reasons for the quantitative findings, Spencer and colleagues embarked on a qualitative study with parents of preschoolers with emerging ADHD symptoms.

### ***Qualitative Study***

Results from Spencer and colleagues' (2021) quantitative study demonstrated that worse caregiver well-being (physical health, mental health, and employment status) fully mediated the relationship between SDH and ADHD symptoms. The purpose of the qualitative study is to expand on the original quantitative findings with parents' perspectives, to validate ("triangulate") the quantitative findings and better understand their meaning (i.e., directionality). Data triangulation is a method used by researchers to check and establish validity in studies and can involve the use of different sources of data to see if a particular outcome is more likely to be a true outcome (Guion, 2002). The goal of this mixed methods data triangulation strategy is to ultimately inform adaptation of an intervention (e.g., components, procedures, and outcome measures) targeting potentially modifiable SDH to improve emerging ADHD symptoms in preschool-age children. In-depth, semi-structured interviews are conducted with parents of preschoolers (3-5 years old) with ADHD symptoms to identify plausible mechanisms by which SDH impact ADHD symptoms and overall functioning.

There are a few reasons for choosing one-on-one, in-depth interviews over other data collection methods. Discussing personal information regarding food insecurity, a child's psychiatric symptoms, and inability to access health insurance can be viewed as personal topics. Providing parents with an individual format may create a comfortable environment, potentially allowing for increased disclosure of sensitive information. In-depth interviews also allow

researchers to gain unique perspectives of each participating parent, which is likely not acquired in a format such as a focus group. This format provides flexibility because participants were able to choose the interview location and time. This is important for the parents in the study who were socioeconomically disadvantaged and may struggle with transportation, taking off work, as well as other barriers. The unique perspectives of parents of children with ADHD symptoms has provided a basis for developing an appropriate intervention, PRECARE to target modifiable SDH and potentially improve emerging ADHD symptoms.

**PRECARE.** With the development of WECARE, Dr. Arvin Garg demonstrated that a low intensity, family-centered screening and referral program at well-child visits was feasible and could increase families' receipt of community-based resources (Garg, et al., 2015). The current preschool intervention framework has been adapted from the WECARE screening and referral model. WECARE has been adapted in several key areas: a new target population (preschoolers with emerging ADHD symptoms), new content (e.g., parental mental health care), and finally the primary outcome (ADHD symptoms). The current pilot study is designed to address unmet social needs affecting families of preschool age children with ADHD symptoms.

The adapted intervention is recruiting legal guardians of preschool-age children (36-71 months) with ADHD symptoms. Families are randomly assigned to receive usual care or PRECARE (**P**REschooler care, **C**ommunity resources, **A**dvocacy, **R**eferral, **E**ducation). PRECARE involves a screening, referral and navigation addressing unmet social needs (e.g., housing, fuel assistance, childcare, employment, education, behavioral health, and food insecurity). The goal of this intervention is to test feasibility and logistics of PRECARE, and to assess if addressing unmet social needs through an early intervention strategy improves a child's ADHD symptoms and clinical outcomes. Participants are currently being recruited from Boston Medical Center (BMC) Primary Care and Specialty Care Pediatric Clinicals, the BMC Family



Medicine clinic, as well as the Dimock Center. There are 24 parents enrolled, with the overall goal of having 60 participants.

### **Current Study**

Research has indicated that ADHD symptoms are present and can be reliably diagnosed in preschool-age children (Dreyer, 2006; Lahey et al., 2016). Identifying early factors that may increase ADHD diagnosis, and intervention strategies is vital for treating emerging ADHD symptoms. Treatment options such as behavioral therapy, parent training, as well as medication have proven effective to improve ADHD symptoms in young children (Klein and Tazkarji, 2013; Ghuman et al., 2007; LaForett, Murray, and Kollins, 2008). Access to these resources vary, as they require ample funds as well as parent availability. Psychosocial factors including—lower household income, less stimulating and supportive home environments, and maternal depression—have been shown to act as contributing factors on ADHD symptoms (Brown et al., 2017). While COVID-19 was not initially a topic related to the current study, the pandemic has highlighted the relevance of the impact of environmental factors on psychological well-being and disparities in access to resources (Moreno et al., 2020). Thus, it is important to identify particular unmet social needs that affect a child in order to provide necessary treatment.

Previous literature has often discussed ADHD using deficit-based language; words such as ‘impairing’ or ‘poor outcomes’. Language, and how we frame discussion of ADHD is extremely important. There is a dearth of information of ADHD framed in a strength-based approach and focus. Thus, the current study aims to reframe the discussion of ADHD with strength-based approach. In-depth, semi-structured interviews with primary caregivers of preschoolers with ADHD are conducted to examine the potential mechanisms by which SDH exacerbate emerging ADHD symptoms and functioning. The overall goal of the qualitative study is to assess two major components: 1) why unmet social needs exacerbate ADHD symptoms 2)

necessary inclusion criteria for an intervention. The purpose of the current study, situated in a social-ecological framework, is to inform clinical practice.

## **Methods**

### ***Participants***

Legal guardians and primary caregivers of children ages 36-71 months old were recruited by clinician (including medical and integrated behavioral health providers) referral at Boston Medical Center (BMC) from August 2019 through the October 2021. A brief recruitment pause took place from March to August of 2020 due to the COVID-19 pandemic, which has impacted the overall study timeline. Revision of methods took place as data collection shifted to remote interviews in order to adapt to COVID-19 safety protocols. Since August 2020, recruitment took place remotely. Thus, some interviews took place prior to the pandemic while some took place during the pandemic.

BMC is a safety net hospital located in New England that predominantly serves low-income and culturally diverse, racial and ethnic minority patients (Spencer et al., 2021). Families speaking English, Spanish, or Haitian Creole were recruited from a variety of treatment settings at BMC to increase potential for unique perspectives. Children met participation criteria if they had an ADHD diagnosis (from a health care provider) or had ADHD symptoms without an ADHD diagnosis. Children with symptoms but no diagnosis were included, because preschoolers are typically not yet diagnosed with ADHD and because we are interested in emerging symptoms that may not yet be fully diagnostic (Applegate et al., 1997; Wilens et al., 2002; Spencer et al., 2021). ADHD symptoms were defined by age and sex-adjusted scores at or above the 80<sup>th</sup> percentile on the ADHD Rating Scale-IV-Preschool Version (see Appendix B). Exclusion criteria for participants included the following: if the child has a history of intellectual disability or autism, a history of psychosis, or doesn't speak fluent English, Spanish or Haitian Creole.

Potential participants were initially phone-screened for eligibility, and then scheduled for an in-person or online (zoom/phone call) study visit if they qualified. Incentive for participation included compensation for their time in the form of a 30-dollar ClinCard, which is a reloadable debit card. There are currently a total of 23 completed interviews. Due to time constraints related to transcribing and translating interview transcripts, only 10 interviews were included in the final thematic analysis process for my thesis.

**Recruitment.** There were five different methods of recruitment for the current study. One method of recruitment was provider referral. Research team members worked with physicians and clinicals to make them aware of the research opportunity in order to facilitate referral of potential participants to the REACH study team. Research members made announcements at staff meetings and discussed the study opportunity with providers. Research members also contacted the Department of Pediatric Psychiatry, at Boston University (BU) and BMC, faculty or providers. Providers provided information of the study to parents of patients. Potential participants were given a study flier, which contained information about the study as well as contact information. Verbal consent from patients was given to providers to have study staff contact and invite the patient to participate. Patient referrals were made through Epic In-Basket to the REACH research team. Epic In-Basket is an electronic messaging system specifically designed for communications in healthcare organizations. Messages are linked to the patient's medical chart.

The research team also approached parents waiting for clinical appointments that might be interested in learning more about the current study. If interested, further information was provided in a private setting that does not interfere with the child's clinical appointment. Parents were able to contact the REACH lab on their own if they heard about the study, or they saw the IRB approved advertisement/fliers. The research team also utilized Clinical Data Warehouse or

Epic to identify patients who were eligible for the study. Viewing a patient's medical record was used to obtain the provider's permission to invite a patient and guardian to participate in the study. Patients were contacted after provider approval. Research team members also received Developmental Behavioral Pediatric (DBP) lists, which identified potential patients who were eligible for the study. REACH members reached out to the patient's provider to seek permission to follow up with the patient and guardian directly.

### ***Data Collection Procedures***

This study was approved by Tufts University Internal Review Board (IRB) and used data from a larger qualitative study conducted by *REACH for ADHD* lab at Boston Medical Center (BMC) in Boston Massachusetts. In addition, this study was approved by Boston University Medical Campus IRB. Informed consent was conducted by research staff, and forms were sent to families via *REDCap* for parents to sign prior to proceeding with the study visit. *REDCap* is a secure, HIPAA-compliant, online platform used to build and manage online surveys and databases (Harris et al., 2009). The study consisted of the following: in-depth qualitative interview, sociodemographic survey, parent health questionnaire, and a symptom checklist questionnaire. The sociodemographic questionnaire collected data on child age, race, nationality, ethnicity, socioeconomic status, stress, and other adverse social determinants. The symptom checklist (Child Behavior Checklist 1.5-5) is a standardized, empirically derived parent report instrument for children that assessed behavioral health symptoms and impairment. The parent health questionnaire assessed parent mental health and symptoms including anxiety (Generalized Anxiety Disorder 2 item), ADHD symptoms (Adult ADHD Self report scale), and depression (Patient Health Questionnaire-2). For the purpose of my thesis, data analysis was focused specifically on the in-depth, semi-structured qualitative interviews.

**Qualitative Interview.** Semi-structured, in-depth interviews lasting approximately 45-60 minutes were conducted in a private research office, over the phone, or on zoom with participants by a trained member of the research staff, who was fluent in the participants preferred language. Children were not present during the interview. The interview guide (see Appendix A) contained open-ended questions to understand the child's symptoms, family stressors, parent well-being, unmet social needs and their relationship to ADHD symptoms and functioning, as well as beneficial intervention strategies. The structure of the interview guide contained three main components as follows: a day in your life, resources (housing, money, food, childcare, healthcare, transportation, activities, intervention), and parent wellness. Interviewers were trained to ask questions that appear to pertain specifically to the participant, thus not all questions were addressed. Vignettes were located at the end of the interview guide to elicit discussion if participants were reluctant to answer questions. Post interview, participants completed a questionnaire collecting sociodemographic information based on items from the National Survey of Children's Health (NSCH). The practicality of each section as it pertains to the study is discussed below.

***Section I: A Day in Your Life.*** The first section sought to understand a typical day in the life of the parent and child from beginning to end. This question is formatted as follows: "*Tell me about a typical day with your child, from beginning to end. Start with when you first get up in the morning...*". The intention of this section was to establish a broad picture of the parent and child's experiences throughout the day and how this might be affected by unmet needs or ADHD.

***Section II: Resources.*** The second section pertained to how finances and resources impacted the parent and the child. After the first section, parents may have mentioned financial stability/strain or unmet resources which affected their daily life; interviewers could prioritize the

mentioned resources to gain a deeper understanding. The resources contained eight subsections; Housing (“*How does your living situation affect your child?*”), Money (“*If you had more money or resources, would you do anything differently for your child? What would you do?*”), Food (“*How does difficulty getting or making enough nutritious food affect your child, if at all?*”), Childcare (“*If you could, what would you change about your child’s school or childcare arrangements?*”), Healthcare (“*What has been hard about getting your child the medical care they need, if anything?*”), Transportation (“*Please describe a time when your child’s behavior affected your decision to leave the house or your transportation choices.*”), Activities (“*Tell me what activities your child does in his or her free time.*”), Intervention (“*Describe a time when a doctor asked you about your child’s behavior, finances, or resources. What was that like? What could have been done differently?*”). Interviewers were trained to ask about all resources, but prioritized asking questions about resources parents emphasized as important. Interviewers aimed to focus on specific resources that directly impacted the interviewee.

**Section III: Parent Wellness.** The third section pertained to parent wellness. The purpose of the section was to gain an understanding of potential stressors (e.g., child’s behavior, resources, other family members, job) that may have affected the parent’s wellness, as well as coping strategies. Some of the questions targeting parent wellness are as follows: “*How has your child’s behavior impacted your stress level or your health?*”, “*How has the health or stress level of other family members affected your child?*”, “*What do you think would help you feel less stress?*”.

### **Validity**

To ensure internal and external validity of the current study, I have followed the guidance of Whittemore and colleagues (2001) validity criteria for qualitative research. They note that developing validity criteria in qualitative research is challenging as it is important to incorporate

rigor, as well as creativity into the analytic process (Whittemore et al., 2001; Johnson, 1999).

Whittemore and colleagues (2001) indicate that there are four primary criteria to meet for validity in qualitative research: integrity, credibility, authenticity, and criticality.

To ensure credibility, researchers must make sure that the results of the research accurately reflect the experience of the participants. Emerging themes and interpretations should be trustworthy and portray the participants accurately. For the current study, to ensure credibility, interviews were interpreted individually and as a group which ensured that interpretations of one participant's experience could be compared to another participant's experience. Comparing participants experiences provided me with the ability to confirm or modify my own interpretations. Negative cases, or cases that do not support my interpretations, were extremely important when looking to accurately represent participants experiences. Multiple lab members contributed to identifying themes across our qualitative interviews to ensure that interpretations were trustworthy. Authenticity, similar to credibility, is to make sure that portrayal of participants is accurate and representative of the sample. To ensure authenticity a wide range of perspectives were represented and included in thematic analysis and interpretations.

Lastly to establish criticality and integrity researchers must ensure that interpretations are valid and grounded within the data (Whittemore et al., 2001). Investigators must be self-critical at each phase of qualitative analysis and should continuously check interpretations to avoid investigator biases. For the current research, we ensured criticality and integrity by conducting our thematic analysis with a group of researchers from diverse backgrounds—this included different levels of training, educational backgrounds, and personal experience working with children with ADHD. Working with a group of researchers provided us with the opportunity to critically analyze each other's biases when interpreting the data and developing themes. For example, as an individual who has previous experience working with children with ADHD, my

prior experience may have factored into my interpretations of the data. Thus, it is important that I acknowledged my previous experience in order to reduce potential biases. As a group, we continuously checked our interpretations to avoid biases at every stage of interpretation—we developed our interpretations separately and reconvened weekly to discuss what was most representative of our qualitative interviews.

### ***Data Analysis***

Interviews were audio-recorded, transcribed verbatim, translated to English when applicable, and all were reviewed for accuracy; errors and personal identifiers were removed. In an effort to gain a deeper understanding of the relationship between SDH and ADHD symptoms and functioning in preschoolers, as well as intervention strategies, the qualitative data was analyzed using thematic analysis approach outlined by Braun and Clarke (2006). For the purpose of the current study, we used Braun and Clarke's (2006) definition of thematic analysis; a method for identifying, analyzing and reporting patterns or themes within the data (interviews).

**Type of Thematic Analysis.** The current study used a largely inductive thematic analysis approach to analyze participant interviews. In terms of the coding process, the codebook was developed directly from the qualitative interviews, which is an inductive approach (Braun and Clarke, 2006). While the codebook was developed directly from the qualitative data, the current study aimed to address a specific research question, which is a deductive approach (Braun and Clarke, 2006). In the current study, the specific research interest was the relationship between SDH and ADHD symptoms. Prior to collection of qualitative data, the previous quantitative findings from Spencer and colleagues' (2021) study helped develop the area of research interest.

**Six steps to thematic analysis.** Qualitative approaches are incredibly complex, diverse and nuanced. Braun and Clarke (2006) attempt to outline the components of thematic analysis clearly by explaining what it is and how to conduct the analysis. While producing guidelines for



thematic analysis, the authors want to emphasize the importance of flexibility in thematic analysis, while remaining clear about how data was analyzed. Braun and Clarke (2006) establish six phases of thematic analysis: 1) Familiarizing yourself with the data; 2) Generating initial codes; 3) Searching for themes; 4) Reviewing the themes; 5) Defining and naming themes; 6) Producing the report. While thematic analysis is not a linear process, the analysis process is based largely on Braun and Clarke's (2006) six phases.

***Familiarizing Yourself with the Data.*** I had the opportunity to familiarize myself with the data in multiple ways. It's important to note that I joined the labs data collection after data collection had already commenced. I had the ability to familiarize myself with the data by listening to audios of interviews, as well as reviewing transcriptions to ensure that transcriptions were accurate and identifiers were removed. In addition, myself and three to four research team members reviewed all transcripts as a process of familiarizing ourselves with the interview data when we began initial coding.

***Generating Initial Codes.*** Prior to the analytic process of interview data, the research interest was established. This phase involved the production of initial codes from the interview data. 'Codes' can identify any feature of the data that appears to be of interest or salient to the researcher (Braun & Clarke, 2006). The process of coding allowed the research team to organize the interview data into meaningful groups that captured the relationship between SDH and ADHD symptoms and functioning in preschoolers, as well as identify any other important codes tied to this relationship. Transcribed interviews were delegated to two or three designated coders. Coders independently coded each interview transcript. Initially we open coded; early concepts about unmet social needs were identified in the transcripts. Coders reviewed five transcripts independently, after five the lab team met as a group and reviewed initial codes. Codes were discussed to establish consensus, and develop a codebook, including definition for all codes.

Through discussion, previous codes were collapsed or expanded, and we allowed for the possibility of new codes. Once initial codes were established, codes were entered into NVivo software.

**Themes.** NVivo is a computer software that provides the ability to sort and compare broader themes in the data, through thematic analysis, to identify patterns across participants. Interviews were conducted until reaching theoretical saturation, i.e., until no new codes or themes emerged with new interviews. After entering the codebook into NVivo, interviews were coded within NVivo by two independent coders (MS, MCS). The two independent coders double coded the interviews; this means that both individuals coded each interview independently, and then compared the codes. After coding each interview independently, the independent coders as well as members of the research team exported codes to analyze codes across all interviews and develop themes.

**Reviewing the Themes.** The fourth phase of thematic analysis is where themes are collapsed, expanded and refined (Braun and Clarke, 2006). Reviewing themes can be a challenging process as it involves reviewing your coded interview data as a whole. For the current project, themes were reviewed and refined by creating a thematic model. This thematic model was refined by two independent research members (MS, MS) and then reviewed by all lab members to discuss if themes needed to be collapsed, expanded, or no longer considered themes. Recommended by Braun and Clarke (2006) this is done in two levels of review: 1) reviewing at the level of the coded data extracts (quotes), 2) considering the validity of the individual extracts and whether the thematic map reflects meanings evident in the data set as a whole.

**Defining Themes.** Following the stage of reviewing themes, Braun and Clarke (2006) state that the second-to-last stage is to further define and name the themes. For this step of the qualitative analysis, there needs to be detailed analysis for each individual theme. While

identifying each individual theme, qualitative models were formed to identify the hierarchical structure for the themes—for example, does one theme affect another theme. Defining the major themes revealed if there were any subthemes to identify—subthemes should also contain a written detailed analysis. In this stage, researchers were able to identify working titles for the themes. This is an important step because the titles provide a representation for the overall importance and meaning of the theme. Each theme should capture specific aspects of the data, and the name of the theme should convey the essence of the theme. To capture all aspects of the data, detailed notes of categorized resources, including all themes, were written to assist with this phase of qualitative analysis. This was used as a guide for producing the results section. A visual representation, or a model, was created that incorporated overall themes of the qualitative analysis. The model identified the affect each theme had on the other during the analysis, which organized the themes in a clean hierarchical layout.

***Producing the Report.*** The final phase indicated by Braun and Clarke's (2006) thematic analysis steps is crafting the report. In this phase, themes have been fully defined and a detailed write-up is reported with each theme. The write-up provides sufficient evidence for each theme and includes data extracts to demonstrate the prevalence of the theme in the qualitative interviews. Each theme is discussed in connection with other themes, along with how the themes connect to the overall research interest. The use of relevant participant extracts in the result section and within the overall themes and subthemes strengthens the qualitative analysis.

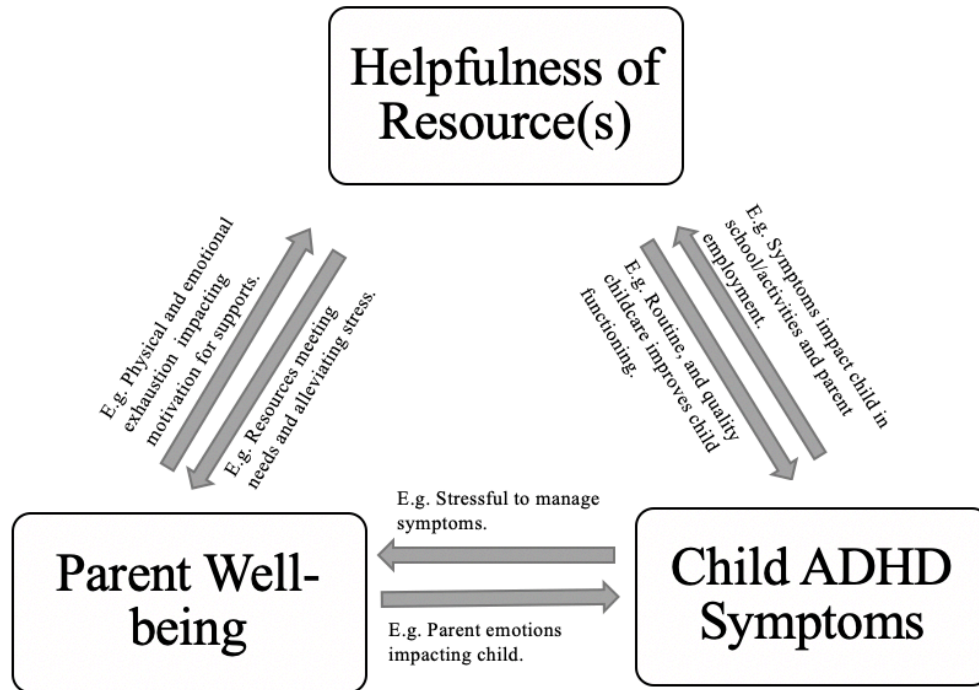
## **Results**

Thematic analysis of the qualitative interviews from the current study yielded three major themes: access to helpful resources, unhelpful resources as detrimental to child ADHD symptoms and parent well-being, and difficulty accessing resources due to parent well-being or child ADHD symptoms. The interaction between these three main themes can be viewed in

Figure 1., and will be discussed in later detail throughout the results. While these three concepts serve as the main themes from the qualitative analysis, it is important to acknowledge the impact of income on access and helpfulness of resources.

**Figure 1**

*Helpfulness Model*



*Note.* This model represents the overarching themes of the current qualitative analysis. Helpfulness of resource(s) has a bidirectional relationship with both parent well-being and child ADHD symptoms. In addition, parent well-being and child ADHD symptoms have a bi-directional relationship.

During the qualitative interviews, income emerged as a pertinent theme. Parents discussed how financial struggles impact access to resources as well as the helpfulness of needed resources. Parents described that experiencing financial difficulty often led to a need for specific resources (e.g., food stamps, childcare). If parents were able to access these resources their needs were either met—resource was helpful and resolved the need for the resource—or their needs

were not met and the resource was unhelpful. Unhelpful resources were detrimental to parent well-being and/or child ADHD symptoms.

Income served as a foundation for needed resources—resources were either not being met, or were low quality and deemed unhelpful to parent and/or child. For example, multiple parents discussed the need for certain qualities of a house, such as the need more space or safe outdoor space. If parents and children lived in a house with little space, and no safe outdoor space, this resource was deemed as unhelpful. The unhelpful resource acted as a mechanism that worsened parent well-being as well as child ADHD symptoms. Parents may become stressed or anxious that their child has no safe space to play, or that they are obligated to share a room with their child and don't have their own space. The child's ADHD symptoms worsen as a result of no safe space to release energy. In this particular situation, a higher earned income would allow the parent to buy a larger house with outdoor space. Income ultimately affected all aspects of the three themes exhibited in the qualitative data.

Through our thematic analysis of qualitative interviews, we noted the importance of access to resources; quality of resources; and how those two aspects affect parent well-being and child ADHD symptoms. Income appeared to impact each of these elements—including resources, and impact to the parental wellbeing and child ADHD symptoms. Based on these findings, we deemed it important emphasize the importance of income when it comes to quality and access to resources. While income is not a major theme, it did serve as a foundation that effected the major themes from our qualitative analysis. Ultimately, there were three themes that were central to a family's experience of meeting the needs for a child with emerging ADHD symptoms; helpfulness of resource, unhelpfulness of resource, and difficulty accessing resource due to symptoms.

## **Helpfulness of Resource**

The current study was designed to address unmet needs for parents of children with emerging ADHD symptoms. The intention of the interview guide was to address aspects of multiple resources: childcare and school, food, housing, family support, treatment access for parent and treatment access for child, employment, structured activities, and transportation. Through discussion of these various resources with parents, thematic analysis revealed important aspects central to a family's experience of meeting unmet needs. One of the major aspects that emerged from the qualitative interviews was the quality of resources, or what we note as helpfulness of resources. The helpfulness or unhelpfulness of resources ultimately impacted parent well-being and child ADHD symptoms (refer to Table 1). Access to helpful resources, the detrimental impact of an unhelpful resource, and difficulty accessing resources will be explained further in the following sections.

**Table 1**

*Accessibility and Helpfulness of Resources*

Need	Food	Childcare and school	Housing	Family Support	Treatment Access for child and parent	Employment	Transportation	Structured Activities
<b>Helpfulness of Resource</b>	Food stamps described as meeting needs	Structured and accommodations, trained staff. Routine and rules	Safe neighborhood/area. Own space, plenty of room. Outdoor space for paly	Consistent family support. Establishing routine and rules for child	Flexible appointment schedule. Appointments close to house. Communicative staff.	Enjoyable work environment. Flexible schedule. Sufficient pay.	Access to reliable care. Ability to pay for car. Resources all in close proximity.	Activities reduce child's energy.
								Positive impact on child's well-being.
<b>Unhelpful/Detrimental Resource</b>	Parent needing to choose between work and getting food stamps.	Unstructured and untrained staff.	Lack of space. Unsafe neighborhoods that impact child's ability to expend energy. Far away from resources and job.	Inconsistent family support. Absent family member affects child's behavior.	Unable to schedule appointments for months. Incorrect prescriptions. Appointments far from house.	Toxic work environment. Insufficient pay. Long commute.	No reliable access to personal transportation. Resources not in close proximity	Activities too expensive
<b>Difficulty accessing resource due to symptoms</b>	Can't take child to grocery store; child eats more than others; picky eater.	Lack of trust in childcare to 'handle' child's ADHD symptoms.	Child tantrums disturbing neighbors	Family support leading to treatment delays and more parent stress. Not attending family gatherings due to judgement	Child too young to access ADHD diagnosis or treatment.	Parent stressed by responsibilities making it hard to work. Child ADHD symptoms impacting parent's availability for work.	Child symptoms affecting ability to safely ride in a car or take public transportation.	ADHD symptoms impacting child's ability to succeed in activity. Parent worried about child's potential to fail.

*Note.* This table provides an overview of the effects of helpful versus unhelpful resources on parental well-being and child ADHD symptoms. In addition, how parental well-being and child ADHD symptoms affect accessing resources.

**Table 2***Total Participants Demographics*

<b>Guardian Sex (n)</b>		<b>Child Sex (n)</b>	
Male	1	Male	12
Female	22	Female	8
<b>Guardian Ethnicity (n)</b>		<b>Child Ethnicity (n)</b>	
White	3	White	2
Black	10	Black	10
Hispanic	5	Hispanic	6
Haitian-Creole	2	Haitian Creole	3
Other	1	Other	1
<b>Unmet Needs (%)</b>			
Food Insecurity	43.50%		
Housing Insecurity	30.40%		
Utilities	26.10%		

*Note.* This table provides the demographic information for all completed qualitative interviews. Data reflects participants who chose to respond.



**Access to Helpful Resources.** Parents who needed specific resources discussed their experiences trying to access these resources. It is important to note that not all parents needed the same resources, although parents shared similar experiences when attempting to access resources. Parents who needed a resource, and were able to access this resource, were in a stable position—but the most important aspect of the resource was whether it was helpful or not helpful. If parents were able to access a helpful resource, this led to improved parent and child well-being. For example, certain parents described the need for food, or experiencing food insecurity. Parents who are asked if they struggled getting food in the household, but have a resource to obtain food, answer ‘no’ to struggling with obtaining food.

Interviewer: “Has, um, your finances ever affected, um, any difficulty, you know, getting nutritious food in the household, or...?”

Interviewee: “No. We get food stamps.”

Thus, a helpful resource resulted in the need for the resource being met. The parent quoted above clearly indicates that they do not have difficulty with obtaining nutritious food because they have a helpful resource of food stamps to meet their food insecurity needs. As a result, the child does not experience a lack of food and the parent does not experience to stress of the inability to obtain food for themselves or their child. The positive outcome of a helpful resource for parent well-being and child ADHD symptoms can additionally be seen for the resources of structured activities and housing.

Structured activities encompass a wide range of activities for the child—typically they are sports and other extracurriculars. Parents who are satisfied with the structured activity for their child, typically discuss the positive impact the activity has on their child’s ADHD symptoms. While discussing structured activities one parent notes the benefit of signing their child up for a sport:

“Last year. And she loved it. So, we did talk about now that it’s getting to be springtime signing her up for...for soccer again...Cause that’s nice ‘cause it gets her running around.”

This parent notes that the benefit of signing their child up for an active sport allows for their child to expend extra energy by running around. As a result of meeting this need, the child may experience a reduced number of hyperactive symptoms in other environments (e.g., home) because their energy is being expended elsewhere. Structured activities also provide a social component, where children are allowed to socialize with other peers their age—this is also a positive aspect of meeting the need of structured activities.

With regards to housing, parents often talked about the importance of a safe environment and having space for themselves and their child. In addition, parents who find a helpful housing environment discuss the benefits of living in an area with a multitude of resource and/or activities to participate in:

“I moved to [Name Omitted] when [Name Omitted] was about one, um, just to give him a different atmosphere. So, it's actually safer...I'm able to let [Name Omitted] go out front without having to be right there with him. And sometimes he gets along with the neighbors, but most of the time he's by himself, or with me. So, um, where I live there's a lotta stuff to do.”

This parent discussed how their move into a safer environment/neighborhood allowed for their child to play outside without the parent worrying about the child’s safety. In addition to the safe environment the parent notes that they have access to many ‘activities’ around the area. Thus, meeting the need of helpful housing environment allows the child to play outside and the parent experiences less stress of having to watch over the child. Further examples of the helpfulness of resources can be found in Table 1.

As mentioned above, income has a foundational impact on the accessibility and helpfulness of resources. The parent quoted above would not be able to afford sufficient food for themselves or their child if they did not have access to a helpful resource. Thus, income is a significant factor in the need for resources, but a helpful resource can compensate for low-income families. It becomes problematic for parents whose resources are unhelpful and are therefore unable to meet their needs. Thematic analysis of the qualitative interviews revealed the harmful impact of an unhelpful resource on parental well-being and child ADHD symptoms.

**Unhelpful Resources as Detrimental.** In continuation with the discussion of access to resources, parents discussed the impact of unhelpful resources. Parents discussed that they may have access to a needed resource, but this resource is ultimately unhelpful. Often, with unhelpful resources, parents' needs were not being met and they typically had to make a 'trade-off' or sacrifice if attempting to meet the need. This 'trade-off' situation left parents having to pick and choose between prioritizing specific needed resources:

“I have to wait until he's five. I tried to call other schools to see if he could get into it, but the other schools I called said that they only would approve him for two days, two hours each. So, where he's at with the four hours is the most he's gonna get...So, I just had to just say, “Alright. Here goes my sacrifice to you.” And that was it. And that's the different parent that I am. I sacrifice for the benefit of my son.”

In the case of school, this parent discusses the difficulty finding a school that would take their child for the optimal number of hours in the day. Parents often discuss their inability to accomplish daily tasks—errands, food shopping, attending work—if their child was not receiving a form of childcare. Parents typically relied on schools and daycares to act as a form of childcare for their children so they could accomplish their own tasks:

“Do anything around the house...anything but I can't do anything when he's here.

Nothing...It's not good at all because I can't... I try to do everything I possibly can while he's in school.”

As described above, when these childcare needs were not met parents had to sacrifice their time to take care of their child. Babysitting, or childcare outside of school, was an alternative solution, but this was not always feasible due to lack of income an inability to pay for childcare. Parents often discussed relying on family members to serve as a form of childcare.

“Not much. It's just his godfather, the one that takes them from me on the weekends. If he takes them on the weekend, then I can sit outside and relax out on the deck or I have friends over, a couple of friends over. That's when he's gone. But if he's not gone, no, there's none of that.”

While family support is often extremely helpful, it is not always consistent for parents. The inability to receive childcare impacts parent’s ability to accomplish other necessary tasks throughout the day.

In addition to schools serving as an unreliable form of childcare, parents also discuss challenges they experienced with the structure of education their child received. Parents discussed their disappointment and stress when schools were ill equipped to teach their child:

“Yeah, also the reason I say that, he went back to school, at the school he's at now they have protocols in place, but the protocols they have in place were for regular kids. They didn't have a procedure in place for him. So, everything they were trying, they were just winging it. Then, his behavior was not right.”

Schools who were unable to provide structure and routine for children with emerging ADHD symptoms were negatively impacting the child’s education. Thus, unhelpful schools served as a detrimental resource for children’s management of ADHD symptoms as well as their education.

In some cases, lack of school structure would lead to teachers calling parents to report behavior difficulties, and in worse case scenarios parents sometimes had to leave their work to get their child. Similar trends of the impact of unhelpful resources were seen in employment.

As noted previously, income serves as a foundation for access and quality of resource. Employment serves as a resource that provides families with the appropriate income to afford needed resources. Unfortunately, many parents discuss the harmful impact of an unhelpful employment environment affecting their overall well-being:

“It's my job, you know? And I'm supposed to be at work, but, so there are days when I call out, because it's just like, look, I can't do it. I'm tired. Like, literally, tired. And it's too much to be driving. It's not like I'm going down one highway. I've got to go down two different highways, every day, back and forth, back and forth, and it gets tiring every day.”

This parent quoted above described the impact of having to travel to their employment. The difficulty of commuting often resulted in overall exhaustion, which affect the parent's willingness to continue to work in that employment situation. Unfortunately, the analysis demonstrated that parents are having to sacrifice their own well-being in order to maintain employment and provide for their family.

In addition to an unhealthy working environment, parents discuss the difficulty of providing for their family and serving as the single source of income. If parents are not receiving sufficient amounts of money they often have to ‘pick and choose’ between paying for certain resources:

“Yeah, so that's, it's a lot, because, um, I mean, I work, and it's just me and her, but it still becomes a lot when I'm taking care of a household, trying to take care of her school, and pay so much stuff, it's just, sometimes it's not enough. So, something has to go. And it

sucks that it has to be her school, but, I mean, it could always happen again...But, everything else is, like, you gotta pick and choose between bills, and my rent, and my car, because I need my car to get back and forth to work and get her back and forth. So, it's either the...the car or her school, so, I need the car.”

In this particular example, the parent talks about the difficulty of having to take their child out of school in order to pay for their car. As a result, the child is taken out of an educational system which is foundational for socioemotional development and academic growth. While the parent may understand the importance of education for their child, without a car they are unable to commute to their job. With no mode of consistent transportation, the parent is left without a source of earned income—thus, the parent must sacrifice their child’s education. Further examples of the unhelpful resources can be found in Table 1.

The impact of unhelpful resources was detrimental to parent well-being and/or child well-being. While parents may have access to certain needed resources, these resources may be unhelpful, which is detrimental to parental well-being and/or child ADHD symptoms because the need is not being met. Additionally, parents who are impacted by financial difficulties are often left with unhelpful resources. Due to unhelpful resources not satisfying the needs of parents and children, parents often have to make ‘trade offs’ between resources. ‘Trade offs’ affect their well-being as well as their child’s. Ultimately access to needed resources alone is not sufficient for parents of children with ADHD symptoms, resources must also be helpful.

### **Difficulty Accessing Resources**

Analysis of the qualitative data established that helpfulness of resources is vital for parent’s well-being and a child’s ADHD symptoms. In addition to the importance of the quality of resources, analysis demonstrated that families may encounter difficulty accessing resources due to parent well-being or child ADHD symptoms. For example, a child’s ADHD symptoms

may prevent the parent from leaving the child in the care of a babysitter because they lack trust in the ability of the babysitter to manage their child's ADHD symptoms. Thus, access to a helpful childcare resource is impacted. In other cases, worse parent well-being may result in the parent taking days off work. As a result, access to the consistent income is affected. I will provide further detail of symptoms affecting access to resources for structured activities and employment.

As discussed above, parents discussed the desire and benefits of having their children participate in structured activities. While insufficient funds are a significant preventative factor in the ability to access structured activities, parents also discussed how ADHD symptoms affect access to specific structured activities:

“Um, she has done swimming. But the problem with swimming is she can't be in a group lesson because in the group lessons or at least at the Y where we were going, they have, like, five or six kids in a class and one teacher, sometimes two. But when the teacher is working with a child, the rest of the kids are sitting on the wall... And so she doesn't sit... So, she can't do that. She was just... So, we did the private lessons for a little bit, but they were... Private lessons get expensive.”

In particular this parent discusses the challenges of their child participating in group swimming lessons due to her hyperactive tendencies and inability to remain still. As a result, the child is unable to participate in the structured activity due to their ADHD symptoms. Private lessons were the alternative solution, but unfortunately insufficient funds result in the inability for the parent to afford the private swim lessons. Thus, the child is unable to participate in this structured activity.

Parents also discussed their sense of worry around placing their child in structured activities due to their ADHD symptoms. While parents may desire to put their child in a

structured activity, they worry that their child's ADHD symptoms would prevent them from succeeding. In particular, some parents had the mindset that their child might 'fail':

“I would love to put her in it, but I don't wanna set her up to fail...I don't wanna set her up to fail in the sense that, I know she's very energetic. I know when she wants to do something, she's gonna do it, like, if she don't wanna do it, she'll give you a little attitude, and then she'll pout, and sit there, you know, and I don't want her to have to go somewhere, and start getting yelled at by somebody different, because she's not doing what she's supposed to do, or she's not following directions the way she's supposed to follow directions. And that's what I don't want, because I know how my child is, and I know how she can get when she doesn't wanna listen, and I don't wanna put her in a position where, you know, she'll fail. You know, and I don't think any parents would want that, but, that's my only skeptical side of putting her in an activity. But I would love to try and put her in something where she can use all of that energy, and be burned out by the time she gets home, you know?”

The parent's worry for their child's future in participating in structured activities, due to the child's ADHD symptoms, prevents the parent from enrolling them in any structured activity. While the parent is seemingly aware of the child's ability to succeed, they fear that the child's energetic behavior and inability to follow directions would result in the child not performing optimally in the activity.

With regards to employment, parents discussed how their well-being affected their motivation or ability to attend their job. As mentioned previously, single parents discussed their difficulties as the only source of income for the family in addition to having to take care of household chores, commuting the appointments, and taking their child to school. This resulted in an increased amount of stress for parents—having to attend a job resulted in additional stress or



overwhelming feelings. Interviewers asked some parents if they ever felt like they don't have time, or time to take care of themselves. One parent responded with the following:

“This is why I call out of work, because I need the time, because like, honestly, it gets, sometimes, I, I've been into the point where it's just like, I get in a mood, and I don't feel like, even this last week, like, I, I've called out of work, like, pretty much probably every other day, because it's just like, I get to a point. I just don't feel like dealing with anybody. I don't wanna be around anybody, and it's just like, I can't afford to call out of work, but if I don't, it's just like, I don't wanna be in a funk around people. I don't wanna be feeling like, um, I...I guess you can say it's depression. I don't know. I mean, stress, yes. But, sometimes it's just, maybe it's just a feeling of being overwhelmed, sometimes, because so much is going on, and trying to do so much, and as you're trying to get everything under control and on track, something else hits you, and it's just like, look, I can't.”

This parent struggled with what they note as feelings of depression impacting their ability to consistently attend their job. Their feelings stress, being overwhelmed became overbearing and affected their ability to be around other individuals. As a result, their well-being affected their ability to work. This parent even acknowledges that they truly can't afford to miss work, but due to their overall well-being they must take a break because there is so much going on in their life that attending their job is too much to handle. Worse parent well-being results in the inaccessibility of employment and maintaining a steady income, which is necessary for families to pay for other resources.

The impact of parent well-being and child ADHD symptoms on resources can be found in Table 1. Worse parent well-being and child ADHD symptoms serve as challenges to accessing helpful resources. The inability for resources to provide accommodations for children with ADHD symptoms, may prevent children from accessing necessary resources—this can be seen

in school systems and childcare, as well as structured activities. The demanding environment of an occupation may result in worsening parent well-being. Worse parental well-being—exhibited by stress, feelings of being overwhelmed, and depression—resulted in parents taking time off work. This cycle is detrimental to parents who cannot afford to take time off work to pay for other resources.

### **Parent Well-Being and Child ADHD Symptoms**

The final component of the triangle model developed from the qualitative analysis is the bi-directional relationship between parent well-being and child ADHD symptoms. Parents expressed an overwhelming feeling of self-doubt regarding their ability to parent. Several parents discussed feeling like they weren't doing enough, or that they needed validation that they were making the right decisions for their child. Parents often talked about making decisions and sacrifices all in the attempt to benefit their child's well-being, while sometimes sacrificing their time, health, and overall well-being. In addition to having to manage rent, pay for school, coordinate medical appointments, and other daily tasks, parents also had to navigate their child's ADHD symptoms. This was challenging for many parents and affected their well-being.

Parents voiced their frustration, stress, and anxiety in attempting to manage their child's ADHD symptoms. Often parents mentioned that they would lose sleep due to their inability to accomplish the daily tasks that needed to be completed due to their child's symptoms interfering with their schedule:

“Sometimes when he's like that, we could have plans for the weekend let's say. I try to do everything Saturdays and Sundays with them...Then if he doesn't behave good on Friday, then I have to cancel the other one too. I mentioned before I prefer not to go to family events or something because I know or I'm afraid that he will act up or do something and then they'll just talk me down. I'd just rather stay home.”

It was common for children to experience emotional dysregulation, which included tantrums and mood shifts. This often-affected parents' ability to leave the house for scheduled events or resulted in parents having to remove themselves and their child from social gatherings.

While discussing the impact child ADHD symptoms had on parental well-being, parents discussed their coping mechanisms, or lack of coping mechanisms. Some parents expressed that they lacked the time for self-care and coping mechanisms, while other parents shared their journey of developing coping mechanisms:

“It's very stressful. I, like...like I tell doctors, like, sometimes I just have to lock myself away. So, it's either I lock myself away or I lock her away, and I can't lock her away, so I just lock myself in my room for a little bit, and even then, she's still at my door, so it's just like, and it, I...I say to myself all the time, like, being honest with myself, like, I feel like, I can do a whole lot better when it comes to her, as far as time and everything, because I know that's all the wants from me, because it's just us, so, at the house it's just me and her, whereas at my mom's house, she has all my cousins, and my nephew, and my brothers and sisters there.”

Parents discuss ‘taking space’ when they feel overwhelmed, often as a result from their child’s ADHD symptoms causing stress. The example above provides insight into how parents choose to take space. In addition, this example demonstrates the stress of being a single parent as well as lacking social supports in the home setting. Taking space can include spending alone time in the bathroom for a few minutes, going to sleep, or even going to the store.

“I go in my room. I take space. And it took me a long time to learn that. I used to yell, scream, break things, but I take space. I go in my room for 10, 15 minutes and I just take space. And I'm usually able to pull it back together and regroup and figure out how to

strategize whatever it was. So, doesn't happen often, but when it does I do have a plan. I do go, I'm able to take space, so”

The ability for parents to take space allows them to regroup and be the best version of themselves for their child. A few parents discussed that if they were in a stressed, or frustrated mood, it was not beneficial to themselves or their child. As a result, taking space and time for oneself, no matter how brief, was viewed as a beneficial coping strategy. Parents also discussed seeking therapy for themselves as an act of self-care, stress management, and learning parenting skills.

As a bi-directional relationship, parent well-being also impacted child ADHD symptoms. As discussed previously in the Spencer and colleagues (2021) quantitative research, worse parent well-being mediated the relationship between SDH and ADHD symptoms. Researchers hypothesized that findings may be attributed to worse parent health potentially decreasing the amount of time a parent spends with their child—which may lead to worsening ADHD symptoms. The current qualitative analysis supports this and expands on how parent well-being impacted child ADHD symptoms.

A few parents discussed how their children were particularly aware of other's emotions. Parents discussed children being attentive to when they displayed negative emotions. In particular, children were often able to notice when parents were upset and/or stressed:

“So, she has people to play with all the time. Whereas, when she comes home, it's just me and her, and I feel like, sometimes like, I can see the look on her face, like, when I tell her, like, "Get out of my room," like, her face just drops. And I don't like that feeling, but it's just sometimes, it's, it becomes too much,”

This example demonstrates how the demand of being present for one's child can be overwhelming and at some points exhausting. Parents sometimes are unable to conceal their

emotions, and as a result their child may become upset. The qualitative analysis demonstrated that worse parent well-being often contributed to heightened emotional dysregulation in children. Parents who were unable to spend time with their children—which typically involved playing games with their child—often exhibited a heightened number of tantrums or outbursts. In some cases, children resulted to breaking toys, objects in the house, or resulting screaming and yelling at the parent and/or siblings. Emotional dysregulation is not uncommon in children with ADHD, and is exhibited by difficulties managing anger, frustration, and other negative emotions. For some individuals, it may also be difficult to regulate positive emotions (e.g., too much excitement) (Bunford, Evans, & Wymbs, 2015). Whether it was the parents lack of energy, or emotional exhaustion, their well-being ultimately affected the child’s emotional dysregulation.

### **Discussion**

Previous quantitative research demonstrated that worse caregiver well-being fully mediated the relationship between SDH and ADHD symptoms in preschool-age children. Worse caregiver well-being was associated with higher levels of ADHD symptoms. In the model including all three factors, socioeconomic status and access to basic needs were no longer significantly associated with ADHD symptoms (Spencer et al., 2021). Thus, addressing caregiver well-being in preschoolers with emerging ADHD symptoms could act as an early intervention strategy. As a result of the quantitative findings, the current qualitative study, framed by the social-ecological model, is designed to gain a deeper understanding of the relationship between SDH and ADHD symptoms and functioning. In addition, the data gathered from the interviews was used to inform an adaptation of an intervention (PRECARE) targeting potentially modifiable SDH to improve emerging ADHD symptoms in preschool-age children.

There were two overall research goals for the current study: 1) Why unmet social needs exacerbate ADHD symptoms 2) Necessary inclusion criteria for an intervention. Previous

research indicated that socioeconomic disadvantage in addition to other unmet needs are strong risk factors for the emergence of ADHD as early as preschool years (Spencer et al., 2021). While some argue that diagnosis of ADHD at a young age is inaccurate, Posner and colleagues' (2007) research indicates that ADHD symptoms exhibited in preschool years is chronic and stable over time. SDH including—housing instability, food insecurity, quality of childcare—lead to increased risk of ADHD (Russell et al., 2016). As discussed previously, there is a gap of knowledge in the degree to which SDH impact ADHD symptoms and functioning. The current study addressed the gap in knowledge.

Addressing the first goal of the current study—findings from thematic analysis indicate three themes on how unmet needs can affect ADHD symptoms: helpfulness of resource, unhelpful/detrimental resource, and difficulty accessing resource due to symptoms. A helpful resource alleviates child ADHD symptoms while supporting parent well-being. Access to an unhelpful resource is detrimental to child ADHD symptoms and parental well-being. Families may have difficulty accessing resources due to parental well-being and child ADHD symptoms. Thus, access to resources alone is not sufficient for families—resources must be helpful in order to alleviate ADHD symptoms and parent well-being. With regards to the second goal, the thematic analysis provided criteria that should be included in the PRECARE intervention. First, the intervention needs to provide parents with access to resources that are close in proximity to their home and easily accessible. Second, parents must be instructed on how to navigate resources. Third, individuals leading the intervention should ensure that resources are affordable, as well as helpful—ultimately resources need to meet the parent and child's needs. Interventionists should prepare to receive feedback if a resource was found to be unhelpful and should look to understand why.

Income served as a foundational factor that affected access to and helpfulness of needed resources. Even if parents had access to needed resources, if the resource was unhelpful, it was detrimental to parental-wellbeing and/or child ADHD symptoms. A bi-directional relationship between parent-wellbeing and child ADHD symptoms became apparent in the qualitative interviews. Thus, if an unhelpful resource worsened a child's ADHD symptoms, as a result, parent well-being would worsen. For example, parents often discussed feeling stressed, anxious, or worried due to their child's ADHD symptoms. Several parents discussed needing to isolate themselves from their child due to feeling overwhelmed, which in turn impacted their child's emotional dysregulation. Parents often found themselves having to prioritize their child's well-being above their own—this often led to unhealthy coping mechanisms and increased parental stress. Treatment focused on parental well-being is a significant factor in treating a child's emerging ADHD symptoms.

Diagnosing and treating emerging ADHD symptoms in preschoolers should be reevaluated and reconstructed to focus not only on ADHD, but affordability, access, and helpfulness of needed resources. In addition, parental wellbeing needs to be accounted for when focusing on treating emerging ADHD symptoms. Using the social-ecological framework, the current findings show the complicated interactive relationships in a child's environment that affects access and quality of needed resources. The major themes that emerged from the qualitative interviews provides crucial information for families and clinical implications for providers. Accessing and finding high quality resources can be challenging, especially for families experiencing financial difficulties.

### **Affordability and Helpfulness of Resources**

Results for the current study indicated the importance of affordability of resources as well as the quality of the resource. Parents who were unable to afford needed resources were left with

little to no solutions for providing that resource for their family. For example, structured activities (e.g., sports, extracurriculars) were often described as expensive, but were viewed as desirable because they were a strategy to manage a child's ADHD symptoms. Unfortunately, if parents were unable to pay for these activities, they were often unable to provide any alternative for their child. In addition to the inability to afford a resource, the helpfulness of the resource was just as important. Parents may be able to provide a structured activity for their child, but if it was low quality—unstructured, inconsistent, poor management—this was often detrimental to the child's ADHD symptoms. Thus, affordability must be met in addition with high quality resources.

Access and quality of a family's resources are often not addressed by clinicians—this may largely be due to the time-consuming process it takes to review the family's ability to afford resources, or what unique resources the family may need. Clinicians may choose to ask parents of young children to complete surveys related to income and needed resources, and based on these answers may provide information on where resources can be accessed: often there is limited follow up with families about the quality or additional resources that are needed. The findings from the current qualitative interviews indicate that this is not a sufficient practice for parents of children with emerging ADHD symptoms. More focus needs to be implemented towards providing individualized support for families regarding needed resources and their helpfulness.

**Implications for Families and Providers.** The findings from the current study support the need for the pilot intervention PRECARE. The goal of this intervention is to test feasibility and logistics of PRECARE, and to assess if addressing unmet social needs through an early intervention strategy improves a child's ADHD symptoms and clinical outcomes. Based on the qualitative information gathered in this study the REACH lab has designed and modified



PRECARE to meet family needs. The expansion of the current qualitative data to the current implementation of PRECARE has significant implications for families and providers. Based on the results of the current study one might assume that the individualized treatment PRECARE provides, would be beneficial to parents as well as their children. Addressing unmet social needs and providing quality resources will likely act as a strategy to improve a child's ADHD symptoms and clinical outcomes. In addition, the availability of this intervention targeting emerging ADHD symptoms in pre-school age children, acts as a pre-treatment or preventative strategy for treating ADHD symptoms.

Establishing an early intervention during a critical period may ultimately diminish symptom severity that may develop as the child grows older (Gurevitz et al., 2014). The goal of early intervention is to improve a child's behavior and ADHD symptoms at a young age, in order to improve future clinical outcomes. Future results from the pilot PRECARE intervention will provide additional information on the criticality of focusing on addressing unmet needs for families. Outcomes of the current qualitative study, and future outcomes of PRECARE have and will continue to inform clinical practice. Ultimately, providers need to tailor their practice to meet the needs of families of children with ADHD. A family's needs can be met by providing preventative intervention strategies that specifically address unmet social needs.

### **The Importance of Parent Well-Being**

Interview data collected from the current study has demonstrated the importance of a healthy parent-wellbeing. Parents often experienced symptoms of anxiety, stress, or overwhelming feelings when needed resources were not met or unhelpful. As our results indicated, overall parental well-being affected the child's ADHD symptoms. This was a bi-directional relationship, which means that worse parental well-being resulted in exacerbated

ADHD symptoms and vice versa. Thus, ensuring a parent has a healthy well-being is fundamental when treating a child's emerging ADHD symptoms.

The intervention PRECARE, while specifically aiming to improve emerging ADHD symptoms by addressing unmet needs will theoretically, simultaneously improve parental well-being. First, providing parents with needed, helpful resources will alleviate a significant amount of stress and anxiety experienced, as described in the qualitative interviews. Second, providing these resources will improve ADHD symptoms, and as a result improve parental well-being. Clinicians should take additional steps to provide parents with needed supports—for example, therapists and parent support groups. Successful treatment for children with ADHD also involves healthy parent well-being.

### **Limitations and Future Directions**

There are several limitations in the current study. It is quite possible that participant responses were influenced by interviewer effect. Interviewer effect is the influence of the characteristics of an interviewer on the responses a participant provides. Characteristics include age, gender, nonverbal cues or demeanor, and tone of voice (“APA Dictionary of Psychology”, 2022). For example, an interviewee may choose to be less open about a sensitive topic if the interviewer is younger than them. We had a very diverse group—including differences in age, interview experience, and race—conducting interviews throughout the data collection process. While all interviewers receive training on how to approach questions, specifically responses and approaches to sensitive material, it is possible that characteristics of interviewers affected interviewee responses. In particular, age could have been a factor that affected responses—majority of interviewers were younger than the interviewees and were not parents themselves. In addition, some interviewers were prone to probe for more detailed answers or take more of a conversational style when conducting the interview. Future research would benefit by adopting a

consistent training for all interviewers and interview style. As a result, varying responses from interviewees could be attributed to their openness and not due to interview effect.

Interviews from three different languages—Spanish, English, and Haitian Creole—were included in the data collection criteria. The purpose of including these three languages was to gain diverse perspectives from parents who have children with emerging ADHD symptoms. Interviews conducted in a language other than English were translated and then transcribed. In some cases, interviews were sent to a company to complete translation and transcription in a timely manner. If this occurred, members of the research team, fluent in the language the interview was conducted in, would check over the accuracy of the translated transcriptions. It is important to note that words could be translated incorrectly, resulting in the context of a story or explanation being lost. Incorrect translation, or inability to capture the meaning of a word from Spanish or Haitian Creole to English could impact the meaning of a section of the interview. This had an impact on how we coded certain aspects of an interview. Although we were cautious to check accuracy of the translations it is possible that we missed incorrect translations.

Translations and transcriptions of interviews were very time consuming, especially when interviews were sent to outside companies. As noted in the methods, only 10 interviews out of the total 23 were included in the thematic analysis of my thesis. This was due to the time-consuming process of needing to translate and transcribe interviews. In order to meet the deadline for May graduation, analysis needed to begin in February. Thus, the ten interviews that were already transcribed and translated were included in the current qualitative analysis.

In addition, there was a vast number of mothers (n=22) who provided interviews in comparison to the one father (n=1) who chose to participate. Thus, only one father's perspective is represented in this sample. There may be various reasons for the lack of fathers participating in this study. One reason is fathers may not be the first person listed as a parental contact for the

child; thus, in our recruitment we may not have been able to determine if the father would like to participate. Another reason is that the father may not be involved in the child's life due to various reasons. In addition, it's important to note that there are multiple family dynamics; single parents, children being raised by grandparents, children being raised by multiple mothers or multiple fathers. In future studies it may be beneficial to actively recruit more father's perspectives in the data. Lastly, the current study consists of 23 parent interviews from low-income families receiving ADHD treatment from the urban safety net hospital, Boston Medical Center. While the current study provides crucial perspectives of an overlooked population of families of children with emerging ADHD symptoms, these results are not necessarily generalizable to the larger population of young children with emerging ADHD symptoms.

As discussed previously, the pilot intervention PRECARE is the immediate future direction. The intervention is a randomized controlled trial (RCT) with parents of 60 (30 intervention, 30 control) low-income children ages 3-5. Participants are randomly assigned to treatment of PRECARE or control treatment (care as usual). After filling out a questionnaire about social needs (e.g., housing, fuel assistance, childcare, employment, education, behavioral health, and food insecurity), participants will meet with the trained interventionist. Participants will be provided with a family resource booklet that addresses unmet social needs. The interventionist will continue to support the family by providing additional care coordination and referral support to ensure the family is able to access needed resources. The interventionist will meet with the family bi-weekly, or more often if needed, until the needed resources are met or until three months have passed. The overall goal is to optimize intervention delivery and assess intervention mechanisms—this will be done through exit interviews and parent-report questionnaires. The current qualitative study provided valuable information for the pilot

intervention PRECARE. As recruitment continues, future modifications to the intervention will be made when necessary.

In addition to continuing PRECARE recruitment, the research team plans to expand on our initial findings for the current study. Five more participants (more if needed) will be recruited to complete five additional interviews. Thematic analysis of the current qualitative interviews has provided invaluable insight into the impact of unmet needs and the effects of SDH on child ADHD symptoms and parent well-being. While this is the case, we realized that certain needed resources were not discussed as much as others in the previous interviews. Continuing to recruit additional participants will allow for a deeper understanding of the less explored areas (e.g., food insecurity). This will involve updating and restructuring portions of the interview guide to focus the questions on the unexplored areas of interest. In particular, we are interested in food insecurity and transportation. As the demographic tables indicate, a large percentage of parents indicated the issue of food insecurity. While this seemed to be an issue that impacted many of the families that were interviewed, there was a limited amount of data discussing food and the impact of food insecurity on ADHD symptoms and parent well-being. The hope is to receive additional data that provides us with more information on the relationship between SDH and ADHD symptoms for preschoolers, as well as gaining insight on modifications that may need to be made for PRECARE.

As we recruit additional individuals to collect more detailed information about specific unmet needs, we are also interested in further understanding the impact of racial and ethnic, as well as cultural differences on ADHD treatment/diagnosis. Based on the current qualitative study, racial, ethnic and cultural differences impacted a parent's treatment approach to their child's ADHD symptoms. In some cases, the family's beliefs impacted a parent's willingness to seek treatment—which in turn resulted in treatment delays and impacted ADHD symptoms.

While the current studies' data on the impact of racial, ethnic, and cultural differences is limited—exploring this topic in more depth is important to how we approach ADHD treatment with individual families.

While continuing additional interviews, the *REACH lab* plans to complete a manuscript for publication and present at various conferences. The material written for my thesis will act as a guide for writing the future manuscript—although data adjustments will be made as we continue to code and conduct additional qualitative interviews. While we plan to present at multiple conferences, at the current moment myself and another research assistant are editing an abstract to submit to the American Public Health Association (APHA) conference.

### **Conclusion**

The goal of the current study was to gain a deeper understanding of why unmet needs impact child ADHD symptoms and further inform adaptation of the PRECARE intervention, targeting modifiable SDH to improve emerging ADHD symptoms in preschool-age children. Thematic analysis of the qualitative interviews demonstrated that presence of a needed resource alone did not reduce ADHD symptoms or relieve parental stress/anxiety. In order to meet the needs of a family, resources needed to be high-quality to alleviate ADHD symptoms and improve parent well-being. If families were unable to meet their needs, low-income families often have to make 'trade-offs' and prioritize needed resources. The preventative intervention, PRECARE, will address unmet social needs to improve a child's ADHD symptoms and clinical outcomes. Results from this early intervention will provide additional information and support for implementing a need-based early intervention into clinical practice for families of children with ADHD.

The current study demonstrated the impact of emerging ADHD symptoms in preschool-age children. Given the complications of providing an ADHD diagnosis during preschool years,

clinical practice should not only focus on preventative intervention strategies but pre-diagnostic strategies. Previous researchers (Gurevitz et al., 2014) have established markers predictive for development of ADHD; these markers can serve as a clinical profile to predict ADHD development, enabling pre-diagnostic strategies. In addition, pre-diagnostic strategies allow families to research and prepare resources necessary for ADHD symptom management. Additional early pre-diagnostic strategies may reduce ADHD symptom severity, which in turn may alleviate parental stress/worry.

While this study focuses largely on the individual and community levels, it is clear that all environmental systems affect access and quality of needed resources—which impacts ADHD symptoms and parent well-being. Societal, political and cultural values directly and indirectly impact access and quality of needed resources for low-income families. For example, policies directly affect meeting the needs of food insecurity (e.g., qualifying for food stamps), which impacts many low-income families. In addition, cultural values may prevent parents from seeking out an ADHD diagnosis for their child. Thus, a child's ADHD symptoms and a parent's well-being is affected by the interaction between characteristics of personal and environmental factors. Overall, the current findings support the need for a more intensive level of assistance for low-income families.

## Appendix A

### Qualitative Interview Guide –Pre-School Unmet Need v.1.1

This interview guide is intended to help assist interviewers with navigating key content areas of data collection for the individual qualitative interviews, ensuring the same content is discussed in each interview. While the guide is used to assist with the discussion, it is not a rigid script that will be adhered to verbatim. This insures that interviewers have the ability to adapt and clarify questions that suit the needs of different patients. Similarly, questions need not be asked in this particular order. Rather, the interviewer will adapt the conversation as needed according to the narrative within each interview, pursuing a priori research topics as well as any emergent themes that evolve from the discussion.

All information and questions to read to participants are in italics. Information intended to guide the interviewer is non-italicized.

Interview Date: \_\_\_\_\_

Interviewer Initials: \_\_\_\_\_

Participant ID#: \_\_\_\_\_

We have invited you to participate in this study because you are a parent of a pre-school aged child, between 3-5 years old, who is hyperactive, impulsive or has difficulty paying attention. We are asking parents to share their experiences so we can understand how these behaviors affect families in their day to day lives, and how everyday stressors affect children with these behaviors. We may ask some questions about difficult topics, and you don't have to answer anything you don't want to.

I. A DAY IN YOUR LIFE – Tell me about a typical day with your child, from beginning to end. Start with when you first get up in the morning... *(Probe if needed along the way, e.g. when you get up what do you do first? What does your child do? Etc. Ask questions below in context of day, explore in depth.)*

II. RESOURCES – Now we are going to ask some questions about how finances and resources impact you and your child. (Note: Interviewer can prioritize asking about needs that have been indicated on questionnaires.)

- a) HOUSING: How does your living situation affect your child? Or how has a change in living situation affected your child? What would you change about your living situation for your child? *(Probe: sharing a room with siblings, moving around, not having your own place).* Has finding the right living situation been harder for you than others because of your child's behavior? *(Probe: needing more bedrooms, others in a building complaining)*
- b) MONEY: If you had more money or resources, would you do anything differently for your child? What would you do? Has your child's behavior been a stress on your finances in any way? *(Probe: paying for activities, therapy, or medication)*
- c) FOOD: How does difficulty getting or making enough nutritious food affect your child, if at all? *(Probe: money to buy food, time to get or prepare food, difficulty getting to store, not knowing how to cook, child is picky eater, etc.)* What has helped



- you that you think would help other families too? Does your child's behavior or eating habits ever impact your ability to feed your child or family?
- d) CHILDCARE: If you could, what would you change about your child's school or childcare arrangements? What things have made it hard to find childcare or enroll your child in school? How has your child's behavior affected your ability to find or stick with childcare? (*Probe: teachers calling to take child home, babysitter not being able to handle behavior, concern about child interacting with other kids*)
  - e) HEALTHCARE: What has been hard about getting your child the medical care they need, if anything? What has gotten in the way of getting care from a mental health provider (like a therapist or psychiatrist) for your child – if anything? (*Probes: stigma, transportation, schedule, finances*)
  - f) TRANSPORTATION: Please describe a time when your child's behavior affected your decision to leave the house or your transportation choices. (*Probe: Child unable to use public transportation due to hyperactivity or other symptoms*)
  - g) ACTIVITIES: Tell me what activities your child does in his or her free time. What activities have been helpful for your child? Would you enroll your child in more activities if you could? What gets in the way of this? (*Probe: Concern about child's behavior, not knowing what's out there, finances, work schedule, transportation*)
  - h) INTERVENTION: Describe a time when a doctor asked you about your child's behavior, finances, or resources. What was that like? How did you feel about it? What could have been done differently?

III. PARENT WELLNESS – Now we are going to ask some questions about the health and wellness of you and your family.

- a) How has your child's behavior impacted your stress level or your health?
- b) How has your child's behavior impacted the health of other family members? (*Probe: other adults, other children*)
- c) How has the health or stress level of other family members affected your child? (*Probe: your own stress or health, that of other adults at home, that of other children at home*)
- d) Does your child seem to notice if you are not feeling well, stressed, or unhappy?
- e) Tell me about how you take care of yourself when you are not feeling well? What helps you?
- f) What do you think would help you be healthier?
- g) What do you think would help you feel less stress?
- h) What would be your ideal employment situation? (*Probe: stay at home with my kid(s), work part-time, full-time, change job*) What would it take to achieve your goals for employment?

INTRO TO VIGNETTES: Throughout our session, I will tell you a few short stories about parents of young children with attention or hyperactivity problems. I will ask for your thoughts about them and how you relate to them, if at all. Although these are not real stories, they are based on our experiences talking to many families in these situations. Now we will read the first story together.

STORY 1, PART A: Patricia's 5-year-old son had always been hyperactive, but it had seemed manageable until this year, when he started kindergarten and they had to move to a smaller apartment due to rental costs. With these changes, her son's behavior got worse. Patricia received daily calls from his teacher and was even asked to pick him up early a few times. She was often embarrassed at home, where her son had difficulty staying in their apartment and would run around the hallways disturbing others. He was loud and his frequent tantrums made her concerned about what her neighbors were thinking. Getting out of the house to run errands such as buying groceries was challenging. She worried that he would run off or that they would be asked to get off the bus due to his behavior.

STORY QUESTIONS: What do you think about this story? (Probe only if needed: What do you think about the problems at school? What do you think about the problems in the apartment building? What do you think about the issues with running errands?)

STORY 1, PART B: At the advice of her son's pediatrician, Patricia decided to work with a therapist to help her son. Finding a therapist was difficult. First, the wait was long for a therapist who took her insurance. Then, scheduling was tricky, and she worried about being able to get to appointments so frequently. She also had a hard time fully trusting others, and opening up about all of her and her son's struggles.

STORY QUESTIONS: What do you think about this story? (Probe only if needed: What do you think about the problems with transportation? With insurance coverage? Wait times and scheduling?)

STORY 2: Sara's daughter, Maria, was diagnosed with ADHD two years ago at the age of 7. Sara always knew her behavior was different than other kids her age and this diagnosis came as no surprise. Recently she had begun medication. It helped at school, but by the time she got home it would wear off, leaving her overexcited. Maria loved her daughter, but she was exhausted. She felt judged by people staring at her in public or telling her to "control her kid." Even family gatherings were painful because she knew she would have to deal with negative comments from family, who didn't seem to understand. Sara felt alone, and overwhelmed by her daughter's difficulties. She had even stopped seeing her own friends and doing things she used to find enjoyable. On top of how tired she felt, Maria recently had many very painful headaches. She knew she needed to see the doctor herself, but it was hard to find the time.

STORY 2 QUESTIONS: What do you think Sara should do next? (Probe if needed: What advice would you give her? How could she improve her health – mental, physical? What resources might be available to her? Who should she talk to? Is there anything you do to take care of yourself that you would recommend to her?)

## Appendix B

### ADHD Rating Scale IV – Preschool Version

Child's Name: \_\_\_\_\_

Sex: M      F      Age: \_\_\_\_\_

Completed By: \_\_\_\_\_

Relationship: \_\_\_\_\_

Circle the number that best describes the child's behavior over the past 6 months.		Rarely or never	Sometimes	Often	Very often
1	Fails to give close attention to details (i.e. rushes through activities, makes careless mistakes)	0	1	2	3
2	Fidgets with hands or feet or squirms in seat (taps hands or feet)	0	1	2	3
3	Has difficulty sustaining attention in tasks or play activities	0	1	2	3
4	Leaves seat in classroom, during meals, or in other situations in which remaining seated is expected	0	1	2	3
5	Does not seem to listen when spoken to directly (tunes you out)	0	1	2	3
6	Runs about or climbs excessively in situations in which it is inappropriate	0	1	2	3
7	Does not follow through on instructions or fails to finish tasks (i.e. "go upstairs, get your shoes and socks"; has difficulty with transitions)	0	1	2	3
8	Has difficulty playing quietly (alone or in groups)	0	1	2	3
9	Has difficulty organizing tasks and activities (i.e. choosing an activity, getting materials, doing steps in order)	0	1	2	3
10	Is "on the go" or acts as if "driven by a motor"	0	1	2	3
11	Avoids tasks that require sustained mental effort (i.e. puzzles, learning ABC's, writing name)	0	1	2	3
12	Talks excessively	0	1	2	3
13	Loses things necessary for tasks or activities (i.e. mittens, shoes, backpack)	0	1	2	3
14	Blurts out answers before questions have been completed	0	1	2	3
15	Is easily distracted	0	1	2	3
16	Has difficulty awaiting turn	0	1	2	3

17	Is forgetful in daily activities (i.e. forgets papers, forgets directions)	0	1	2	3
18	Interrupts or intrudes on others	0	1	2	3

## Appendix C

### Screening Script

#### 1. Introduction of Investigator or Research Assistant

Hello, is this the parent or legal guardian of [PATIENT'S NAME]? Do you have a moment? My name is [Research Staff Name], and I am a research assistant at Boston Medical Center working on a research study with Dr. Andrea Spencer. We received permission from your child's clinical provider [Provider Name] to contact to you about a research study we are conducting to learn about how common life stressors such as financial, housing, and school problems affect young children with attention and hyperactivity problems.

#### 2. Immediate opportunity to opt-out

I wanted to follow up to see if you are interested in hearing more about the study. You should be aware that research is completely separate from your child's clinical care, and whether or not you decide to hear more about the study will not affect your child's care in any way.

Is it okay for me to continue?

- If individual says “no”, then say thank you, and do not continue
- If the individual says yes, continue with script.

We are doing this study in order to be able to design a program to address these stressors for kids with attention and hyperactivity problems. To do this, we are asking parents of young children who have struggled with these symptoms to share their perspectives. Participants in the study will have an hour-long interview with study staff and complete a sociodemographic questionnaire. There will be some compensation for participation.

If you think you might be interested in participating and if you agree, we will ask you a few questions now about you to determine whether you are eligible to participate. If you qualify for the study and decides to join, we will schedule you for a study visit. If not, I will not contact you again and we will not keep any information that could identify you or your child. The information that you give us will be used to see if you can be in the study. We will keep your answers to the personal questions on a piece of paper that doesn't have your name on it. The only paper that will have your name on it will just say if you do or do not qualify to be in the study, but not why or why not. The data we collect at this time will destroyed after we complete the phone call. Saying yes to this screening does not mean you have to be in the study. If you have any questions, please ask them now or at any time to the study Principal Investigator, Dr. Andrea Spencer, at 617-414-1932.

Are you interested in participating?

#### Inclusion:

- Are you the legal guardian for your child?
- How old is your child?
- Has your child been diagnosed with ADHD?

**Exclusion:**

- Has your child ever been diagnosed with autism?
- Has your child ever been diagnosed with low IQ or intellectual disability?
- Has your child ever been diagnosed with schizophrenia or another psychotic disorder?
- Has your child lost touch with reality, or does your child see or hear things that are not really there?

[If the child does not have a diagnosis of ADHD]: Now I will need to ask you 18 questions about your child's symptoms. This will take about 5 or 10 minutes. Are you able to answer these questions right now?

## Appendix D

### Parent Health Questionnaire

Please answer the questions below, rating yourself on each of the criteria shown using the scale on the right side of the page. As you answer each question, place an X in the box that best describes how you have felt and conducted yourself over the past 6 months.

	Never	Rarely	Sometimes	Often	Very Often
1. How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?					
2. How often do you have difficulty getting things in order when you have to do a task that requires organization?					
3. How often do you have problems remembering appointments or obligations?					
4. When you have a task that requires a lot of thought, how often do you avoid or delay getting started?					
5. How often do you fidget or squirm with your hands or feet when you have to sit down for a long time?					
6. How often do you feel overly active and compelled to do things, like you were driven by a motor?					

Over the <b>last 2 weeks</b> , how often have you been bothered by the following problems?	Not at all	Several Days	More than half the days	Nearly everyday
1. Feeling nervous, anxious, or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3

Over the <b>last 2 weeks</b> , how often have you been bothered by the following problems?	Not at all	Several Days	More than half the days	Nearly everyday
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed or hopeless	0	1	2	3

## Appendix E

### General Information Questionnaire

CODENAME/ID#: \_\_\_\_\_

We have some follow-up questions to ask about you, your household, and the child enrolled in this study. Thank you for your participation.

#### ABOUT YOUR CHILD

**1. What is this child's gender?**

- Male
- Female
- Don't know/refused

**2. How old is this child?** \_\_\_\_\_ years and \_\_\_\_\_ months

**3. How are you related to this child?**

- Mother (biologic)
- Father (biologic)
- Adoptive mother/father
- Foster mother/father
- Grandmother/grandfather
- Aunt/uncle
- Other relative (including godparents)
- Don't know/refused

**4. What is this child's race? *Mark (X) all that apply.***

- White
- Black or African American
- Haitian
- Cape Verdean
- American Indian or Alaskan Native
- Native Hawaiian or Other Pacific Islander
- Asian

If so, please specify:

- Japanese
- Chinese
- Korean
- Pakistani
- Indian
- Other (specify \_\_\_\_\_)
- Hispanic, Latinx, or Spanish origin
  - If so, please specify:
    - Cuban
    - Mexican
    - Puerto Rican
    - South or Central American



- Other Spanish culture or origin
- Some other race (specify): \_\_\_\_\_
- More than one race (specify): \_\_\_\_\_

**5. Where was this child born?**

- In the United States
- Outside the United States
  - **If outside the United States:**
  - a. In what country was this child born?** \_\_\_\_\_
  - b. How long has your child been living in the United States?**  
 \_\_\_ \_\_\_ years and \_\_\_ \_\_\_ months

**6. Is this child in school?**

- Yes
- No

**7. Does this child have any special services from the public school district, such as an IEP or a 504 plan?**

- Yes
- No
- Don't know/refused

ABOUT YOU

**1. What is your gender?**

- Male
- Female
- Don't know/refused

**2. How old are you? \_\_\_\_\_ years**

**3. Are you this child's primary caregiver?**

- Yes
- No

**4. Do you live in the same household as this child?**

- Yes
- No
- Don't know/refused

**5. What is your marital status?**

- |   |  |
|---|--|
| <input type="checkbox"/> Married                                | <input type="checkbox"/> Divorced          |
| <input type="checkbox"/> Not married, but living with a partner | <input type="checkbox"/> Separated         |
| <input type="checkbox"/> Never married                          | <input type="checkbox"/> Widowed           |
|   | <input type="checkbox"/> Don't know/refuse |

**6. Where were you born?**

- In the United States
- Outside of the United States

→ If yes, specify:

1. In what country were you born? \_\_\_\_\_
2. When did you come to live in the United States? Year: \_\_\_\_\_

**7. Which of the following best describes your race? Mark (X) all that apply.**

- White
- Black or African American
- Haitian
- Cape Verdean
- American Indian or Alaskan Native
- Native Hawaiian or Other Pacific Islander
- Asian

If so, please specify:

- Japanese
- Chinese
- Korean
- Pakistani
- Indian
- Other (specify \_\_\_\_\_)

- Hispanic, Latinx, or Spanish origin

If so, please specify:

- Cuban
- Mexican
- Puerto Rican
- South or Central American
- Other Spanish culture or origin

- Some other race (specify): \_\_\_\_\_
- More than one race (specify): \_\_\_\_\_

**8. What is the highest grade or level of school you have completed?**

- 8<sup>th</sup> grade or less
- 9<sup>th</sup>-12<sup>th</sup> grade; no diploma
- High School graduate or GED completed
- Completed a vocational, trade, or business school program
- Some college credit, but no degree
- Associate Degree (AA, AS)

- Bachelor's Degree (BA, BS, AB)
- Master's Degree (MA, MS, MSW, MBA)
- Doctorate (PhD, EdD) or Professional Degree (MD, DDS, DVM, JD)

**9. In general, how is your mental or emotional health?**

- Excellent
- Very good
- Good
- Fair
- Poor
- Don't know/refused

**10. In general, how is your physical health?**

- Excellent
- Very good
- Good
- Fair
- Poor
- Don't know/refused

ABOUT YOUR CHILD'S HEALTH

**8. In general, how would you describe your child's health?**

- |                                    |   |
|------------------------------------|---|
| <input type="checkbox"/> Excellent | <input type="checkbox"/> Fair               |
| <input type="checkbox"/> Very good | <input type="checkbox"/> Poor               |
| <input type="checkbox"/> Good      | <input type="checkbox"/> Don't know/refused |

**9. Has your child ever been referred to or enrolled in Early Intervention or another intervention program for language, literature and motor skills?**

- Currently in EI/other intervention program
- In EI in the past/in other intervention program in the past
- Referred to EI but never enrolled
- No
- Don't know/refused

**10. Did you or this child ever receive any behavioral therapy or other intervention to help with his or her behavior?**

- Yes
- No

**11. Has this child ever taken medication for ADHD or ADD?**

- No

- Yes
  - If yes, is this child currently taking medication for ADHD or ADD?
    - Yes
    - No

**12. Do you have any concerns about how your child...**

	Yes	No	A little	Don't know/refused
...talks and makes speech sounds?				
...understands what you say?				
...uses his or her hands and fingers to do things?				
...uses his or her arms and legs?				
...behaves?				
...gets along with others?				
...is learning to do things for himself/herself?				
...is learning preschool or school skills?				

**13. Has a doctor or other health care provider ever told you that your child had**

	Yes	No	Don't know/refused
<b>ADHD or ADD?</b>			
<b>Depression?</b>			
<b>Anxiety Problems?</b>			
<b>Behavior or conduct problems, such as oppositional defiant disorder or conduct disorder?</b>			
<b>Autism, Asperger's Disorder, pervasive developmental disorder or other autism spectrum disorder?</b>			
<b>Any developmental delay?</b>			
<b>Intellectual disability or mental retardation?</b>			
<b>Cerebral palsy?</b>			
<b>Speech or language problems?</b>			
<b>Asthma?</b>			
<b>Any other chronic lung disease, such as BPD?</b>			
<b>Diabetes?</b>			
<b>Epilepsy or seizure disorder?</b>			
<b>Hearing problems?</b>			
<b>Vision problems not corrected with standard glasses?</b>			
<b>Congenital heart disease?</b>			
<b>Bone, joint or muscle problems (not including broken bones or torn muscles)?</b>			
<b>Brain injury?</b>			
<b>HIV/AIDS?</b>			
<b>Sickle cell anemia?</b>			
<b>Genetic syndromes, such as Down Syndrome or Fragile X?</b>			

Need for medical assistive device such as trach, g-tube, VP shunt etc.?			
Food allergies?			
Other: _____			

INSURANCE

**1. Is this child covered by any of the following types of health insurance or health coverage plans? Mark all that apply**

- Insurance through a current or former employer or union
- Insurance purchased directly from an insurance company
- Medicaid, Medical Assistance, MassHealth or any kind of government assistance plan for those with low incomes or a disability
- Medicare
- TRICARE or other military health care
- Indian Health Service
- Other, specify: \_\_\_\_\_
- This child does not have health insurance/Pay out of pocket
- Don't know/ refused

**2. During the past 12 months, was there ever a time when your child did not have health insurance?**

- Yes
- No
- Don't know/refused

DIFFICULTIES ACCESSING HEALTHCARE

**1. During the past 12 months, was there any time when THIS CHILD needed health care but it was not received? *By health care, we mean medical care as well as other kinds of care like dental care, vision care, and mental health services.***

- Yes
  - **If yes:**
    - a. Which types of care were not received? Mark (X) all that apply.**
      - Medical Care
      - Mental health services
      - Dental Care
      - Medication
      - Vision Care
      - Other, specify: \_\_\_\_\_
      - Hearing Care
    - b. Which of the following contributed to this child not receiving needed health services?**
      - This child was not eligible for the services
      - The services this child needed were not available in your area
      - There were problems getting an appointment when this child needed one
      - There were problems with getting transportation or child care
      - The (clinic/doctor's)office wasn't open when this child needed care
      - There were issues related to cost

- No
- Don't know/refused

**2. During the past 12 months, was there any time when YOU needed health care but it was not received? *By health care, we mean medical care as well as other kinds of care like dental care, vision care, and mental health services.***

- Yes
- If yes:

**c. Which types of care were not received? Mark (X) all that apply.**

- |                                       |   |
|---------------------------------------|---|
| <input type="checkbox"/> Medical Care | <input type="checkbox"/> Mental health services |
| <input type="checkbox"/> Dental Care  | <input type="checkbox"/> Medication             |
| <input type="checkbox"/> Vision Care  | <input type="checkbox"/> Other, specify: _____  |
| <input type="checkbox"/> Hearing Care |   |

**d. Which of the following contributed to you not receiving needed health services?**

- You were not eligible for the services
- The services you needed were not available in your area
- There were problems getting an appointment when you needed one
- There were problems with getting transportation or child care
- The (clinic/doctor's)office wasn't open when you needed care
- There were issues related to cost

- No
- Don't know/refused

### ABOUT YOUR HOUSEHOLD

**1. Including yourself, how many people are living or staying at your address? \_\_\_\_\_**

*Include everyone who usually lives or stays at this address. Do NOT include anyone who is living somewhere else for more than two months, such as a college student living away or someone in the Armed Forces on deployment.*

**2. How many people in your household are family members? \_\_\_\_\_**

*Family is defined as anyone related to this child by blood, marriage, adoption, or through foster care.*

**3. Including this child, how many people ages 0-17 are in your home? \_\_\_\_\_**

**4. Including yourself, how many people 18 and over live in your home? \_\_\_\_\_**

**5. What is the primary language spoken in the household?**

- |                                       |   |
|---------------------------------------|---|
| <input type="checkbox"/> English      | <input type="checkbox"/> Haitian Creole |
| <input type="checkbox"/> Spanish      | <input type="checkbox"/> Arabic         |
| <input type="checkbox"/> Portuguese   | <input type="checkbox"/> Somali         |
| <input type="checkbox"/> Cape Verdean | <input type="checkbox"/> Other: _____   |

**6. What other languages are spoken in the household? Mark (X) all that apply.**

- English
- Spanish
- Portuguese
- Cape Verdean
- Haitian Creole

- Arabic
- Somali
- Other: \_\_\_\_\_
- N/A

INCOME AND EMPLOYMENT

- 1. Think about your total combined family income IN THE LAST CALENDAR YEAR for all members of the family? What is that amount before taxes? *Include money from jobs, child support, social security, retirement income, unemployment payments, public assistance, and so forth. Also, include income from interest, dividends, net income from business, farm, or rent, and any other money income received.***

Income: \$ \_\_\_\_\_

- 2. Since this child was born, how often has it been very hard to get by on your family's income – hard to cover the basics like food or housing?**

- Never
- Rarely
- Somewhat often
- Very often

- 3. Were you employed at least 50 out of the past 52 weeks?**

- Yes

→ **If yes:**

**a. How many jobs do you have? \_\_\_\_\_ jobs**

**b. How many hours do you/does the child's caregiver work per week? \_\_\_\_\_ hours**

- No
- Don't know/refused

- 4. Do problems getting childcare make it difficult for you to work or study?**

- Yes

→ **If yes, do problems getting childcare mean that you are...**

Unable to work/unable to work more additional hours?

Unable to attend classes?

Other: \_\_\_\_\_

Don't know/refused

- No
- Don't know/refused

CHILD HEALTHWATCH VITAL SIGNS

**1. Within the past 12 months, you worried whether your food would run out before you got money to buy more.<sup>2</sup>**

- |   |  |
|---|--|
| <input type="checkbox"/> Often true     | <input type="checkbox"/> Never true                      |
| <input type="checkbox"/> Sometimes true | <input type="checkbox"/> Don't know/prefer not to answer |

**2. Within the past 12 months, the food that you bought just didn't last and you didn't have money to get more.**

- Often true
- Sometimes true
- Never true
- Don't know/prefer not to answer

**3. What type of housing does your child live in?**

- An apartment
- A house/townhouse/condo
- A shelter/transitional living situation
- Residential treatment/supervised housing
- Government housing (Military, etc.)
- Mobile home/trailer
- Room/rented room
- Car
- No steady place to sleep at night
- Hotel/motel
- Other: \_\_\_\_\_
- Don't know/prefer not to answer

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<sup>2</sup> **Childwatch Hunger Vital Sign.** Hager, E. R., Quigg, A. M., Black, M. M., Coleman, S. M., Heeren, T., Rose-Jacobs, R., Cook, J. T., Ettinger de Cuba, S. E., Casey, P. H., Chilton, M., Cutts, D. B., Meyers A. F., Frank, D. A. (2010). Development and Validity of a 2-Item Screen to Identify Families at Risk for Food Insecurity. *Pediatrics*, 126(1), 26-32. doi:10.1542/peds.2009-3146



**4. Do you own your own home?**

- Yes
- No
- Don't know/prefer not to answer

**5. During the last 12 months, was there a time when you were not able to pay the mortgage or rent on time because of economic difficulties?<sup>3</sup>**

- Yes
- No
- Don't know/prefer not to answer

**6. Are you temporarily living with other people even for a little while because of financial difficulties?**

- Yes
- No
- Don't know/prefer not to answer

**7. During the last 12 months, has the gas/electric/oil company sent you a letter threatening to shut off or refuse delivery of the gas/electricity/oil in the house for not paying bills?<sup>4</sup>**

- Yes
- No
- Already shut off
- Don't know/prefer not to answer

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<sup>3</sup> **Childwatch Housing Stability Vital Sign.** Sandel, M., Sheward, R., Ettinger de Cuba, S., Coleman, S., Frank, D. A., Chilton, M., Black, M., Heeren, T., Pasquariello, J., Casey, P., Ochoa, E., Cutts, D. B. (2018). Unstable Housing and Caregiver and Child Health in Renter Families. *Pediatrics*, 141(2), e20172199.

<sup>4</sup> **Childwatch Energy Security Vital Sign.** Cook, J. T., Frank, D. A., Casey, P. H., Rose-Jacobs, R., Black, M. M., Chilton, M., Ettinger de Cuba, S. E., Appugliese, D., Coleman, S., Heeren, T., Berkowitz, S., Cutts, D. B. (2008). A Brief Indicator of Household Energy Security: Associations with Food Security, Child Health, and Child Development in US Infants and Toddlers. *Pediatrics*, 122(4), 867-875. doi:10.1542/peds.2008-0286

### References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). <https://doi.org/10.1176/appi.books.9780890425596>
- Applegate, B., Lahey, B. B., Hart, E. L., Biederman, J., Hynd, G. Q., Barkley, R. A., Ollendick, T., Frick, P. J., Greenhill, L., McBurnett, K., Newcorn, J. H., Kerdyk, L., Garfinkel, B., Waldman, I., & Shaffer, D. (1997). Validity of the age-of-onset criterion for ADHD: A report from the DSM-IV field trials. *Journal of the American Academy of Child and Adolescent Psychiatry*, 36(9), 1211-1221.
- APA Dictionary of Psychology. (2022). Retrieved 18 April 2022, from <https://dictionary.apa.org/interviewer-effect>
- Barkley, R. A., Fischer, M., Newby, R. F., & Breen, M. J. (1988). Development of a multimethod clinical protocol for assessing stimulant drug response in children with attention deficit disorder. *Journal of Clinical Child Psychology*, 17(1), 14–24. [https://doi.org/10.1207/s15374424jccp1701\\_3](https://doi.org/10.1207/s15374424jccp1701_3)
- Barkley, R. A. (2006). ADHD in adults: Developmental course and outcome of children with ADHD, and ADHD in clinic-referred adults. *Attention-Deficit Hyperactivity Disorder, a Handbook for Diagnosis and Treatment (3<sup>rd</sup> edition)*. New York, Guilford Press, 248-253.
- Beckman P. J. (1983). Influence of selected child characteristics on stress in families of handicapped infants. *Am J Ment Defic.*, 88(2), 150-156.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>

- Braveman, P., & Gottlieb, L. (2014). The Social Determinants of Health: It's Time to Consider the Causes of the Causes. *Public Health Reports, 129*(1\_suppl2), 19–31.  
<https://doi.org/10.1177/00333549141291S206>
- Breaux, R., Dvorsky, M. R., Marsh, N. P., Green, C. D., Cash, A. R., Shroff, D. M., Buchen, N., Langberg, J. M., & Becker, S. P. (2021). Prospective impact of COVID-19 on mental health functioning in adolescents with and without ADHD: Protective role of emotion regulation abilities. *Journal of Child Psychology and Psychiatry, 62*(9), 1132–1139.  
<https://doi.org/10.1111/jcpp.13382>
- Brehaut, J. C., Kohen, D. E., Raina, P., Walter, S. D., Russell, D. J., Swinton, M., O'Donnell, M., & Rosenbaum, P. (2004). The health of primary caregivers of children with cerebral palsy: how does it compare with that of other Canadian caregivers?. *Pediatrics, 114*(2), e182–e191. <https://doi.org/10.1542/peds.114.2.e182>
- Brehaut, J. C., Garner, R. E., Miller, A. R., Lach, L. M., Klassen, A. F., Rosenbaum, P. L., & Kohen, D. E. (2011). Changes Over Time in the Health of Caregivers of Children With Health Problems: Growth-Curve Findings From a 10-Year Canadian Population-Based Study. *American Journal of Public Health, 101*(12), 2308–2316.  
<https://doi.org/10.2105/AJPH.2011.300298>
- Breslau, N., Staruch, K. S., & Mortimer, E. A., Jr (1982). Psychological distress in mothers of disabled children. *American journal of diseases of children (1960), 136*(8), 682–686.
- Brown, N. M., Brown, S. N., Briggs, R. D., Germán, M., Belamarich, P. F., & Oyeku, S. O. (2017). Associations Between Adverse Childhood Experiences and ADHD Diagnosis and Severity. *Academic Pediatrics, 17*(4), 349–355.  
<https://doi.org/10.1016/j.acap.2016.08.013>

- Burton, P., & Phipps, S. (2009). Economic Costs of Caring for Children with Disabilities in Canada. *Canadian Public Policy / Analyse de Politiques*, 35(3), 269–290.  
<http://www.jstor.org/stable/40345324>
- Byrne, J. M., Bawden, H. N., Beattie, T. L., & DeWolfe, N. A. (2000). Preschoolers Classified as Having Attention-Deficit Hyperactivity Disorder (ADHD): DSM-IV Symptom Endorsement Pattern. *Journal of Child Neurology*, 15(8), 533–538. <https://doi.org/10.1177/088307380001500807>
- Cunningham, C. E., Siegel, L. S., & Offord, D. R. (1985). A developmental dose-response analysis of the effects of methylphenidate on the peer interactions of attention deficit disordered boys. *Journal of child psychology and psychiatry, and allied disciplines*, 26(6), 955–971. <https://doi.org/10.1111/j.1469-7610.1985.tb00609.x>
- Curchack-Lichtin, J. T., Chacko, A., & Halperin, J. M. (2014). Changes in ADHD Symptom Endorsement: Preschool to School Age. *Journal of Abnormal Child Psychology*, 42(6), 993–1004. <https://doi.org/10.1007/s10802-013-9834-9>
- Danielson, M. L., Bitsko, R. H., Ghandour, R. M., Holbrook, J. R., Kogan, M. D., & Blumberg, S. J. (2018). Prevalence of parent-reported ADHD diagnosis and associated treatment among U.S. children and adolescents, 2016. *Journal of Clinical Child & Adolescent Psychology*. Advance online publication.  
<https://doi.org/10.1080/15374416.2017.1417860>
- DeSantis, A., Coster, W., Bigsby, R., & Lester, B. (2004). Colic and fussing in infancy, and sensory processing at 3 to 8 years of age. *Infant Mental Health Journal*, 25, 522-539.
- Dreyer, B. P. (2006). The Diagnosis and Management of Attention-Deficit/Hyperactivity Disorder in Preschool Children: The State of Our Knowledge and Practice. *Current*

*Problems in Pediatric and Adolescent Health Care*, 36(1), 6–30.

<https://doi.org/10.1016/j.cppeds.2005.10.001>

Dyson, L., Edgar, E., & Crnic, K. (1989). Psychological predictors of adjustment by siblings of developmentally disabled children. *American Journal on Mental Retardation*, 94(3), 292–302.

*DSM-5 Diagnostic Criteria for ADHD*. (n.d.). 1.

Flood, E., Gajria, K., Sikirica, V., Dietrich, C. N., Romero, B., Harpin, V., Banaschewski, T., Quintero, J., Erder, M. H., Fridman, M., & Chen, K. (2016). The caregiver perspective on paediatric ADHD (CAPPA) survey: Understanding sociodemographic and clinical characteristics, treatment use and impact of ADHD in Europe. *Journal of Affective Disorders*, 200, 222-234. <https://doi.org/10.1016/j.jad.2016.04.011>

Frey, K. S., Greenberg, M. T., & Fewell, R. R. (1989). Stress and coping among parents of handicapped children: A multidimensional approach. *American Journal on Mental Retardation*, 94(3), 240–249.

Furman, L. (2005). What Is Attention-Deficit Hyperactivity Disorder (ADHD)? *Journal of Child Neurology*, 20(12), 994–1002. <https://doi.org/10.1177/08830738050200121301>

Garg, A., Toy, S., Tripodis, Y., Silverstein, M., & Freeman, E. (2015). Addressing Social Determinants of Health at Well Child Care Visits: A Cluster RCT. *Pediatrics*, 135(2), e296–e304. <https://doi.org/10.1542/peds.2014-2888>

Ghanizadeh, A. (2013). Agreement between Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, and the proposed DSM-V attention deficit hyperactivity disorder diagnostic criteria: An exploratory study. *Comprehensive Psychiatry*, 54(1), 7–10. <https://doi.org/10.1016/j.comppsy.2012.06.001>

- Ghuman, J. K., Arnold, L. E., & Anthony, B. J. (2008). Psychopharmacological and Other Treatments in Preschool Children with Attention-Deficit/Hyperactivity Disorder: Current Evidence and Practice. *Journal of Child and Adolescent Psychopharmacology*, *18*(5), 413–447. <https://doi.org/10.1089/cap.2008.022>
- Ghuman, J. K., Riddle, M. A., Vitiello, B., Greenhill, L. L., Chuang, S. Z., Wigal, S. B., Kollins, S. H., Abikoff, H. B., McCracken, J. T., Kastelic, E., Scharko, A. M., McGough, J. J., Murray, D. W., Evans, L., Swanson, J. M., Wigal, T., Posner, K., Cunningham, C., Davies, M., & Skrobala, A. M. (2007). Comorbidity Moderates Response to Methylphenidate in the Preschoolers with Attention-Deficit/Hyperactivity Disorder Treatment Study (PATs). *Journal of Child and Adolescent Psychopharmacology*, *17*(5), 563–579. <https://doi.org/10.1089/cap.2007.0071>
- Goldman, L. S. (1998). Diagnosis and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents. *JAMA*, *279*(14), 1100. <https://doi.org/10.1001/jama.279.14.1100>
- Gowen, J. W., Johnson-Martin, N., Goldman, B. D., & Appelbaum, M. (1989). Feelings of depression and parenting competence of mothers of handicapped and nonhandicapped infants: a longitudinal study. *American journal of mental retardation : AJMR*, *94*(3), 259–271.
- Greenhill, L., Kollins, S., Abikoff, H., McCracken, J., Riddle, M., Swanson, J., McGough, J., Wigal, S., Wigal, T., Vitiello, B., Skrobala, A., Posner, K., Ghuman, J., Cunningham, C., Davies, M., Chuang, S., & Cooper, T. (2006). Efficacy and Safety of Immediate-Release Methylphenidate Treatment for Preschoolers With ADHD. *Journal of the American*

- Academy of Child & Adolescent Psychiatry*, 45(11), 1284–1293.  
<https://doi.org/10.1097/01.chi.0000235077.32661.61>
- Guion, L. A. (2002). *Triangulation: Establishing the Validity of Qualitative Studies*. 3.
- Gurevitz, M., Geva, R., Varon, M., & Leitner, Y. (2014). Early Markers in Infants and Toddlers for Development of ADHD. *Journal of Attention Disorders*, 18(1), 14–22.  
<https://doi.org/10.1177/1087054712447858>
- Hester, M. (n.d.). *YOUR123@STOCK.ADOBE.COM; JEZPER@STOCK.ADOBE.COM*. 1.
- Johnson, M. (1999). Observations on positivism and pseudoscience in qualitative nursing research. *Journal of Advanced Nursing*, 30, 67-73.
- Kaplan, A., & Adesman, A. (2011). Clinical diagnosis and management of attention deficit hyperactivity disorder in preschool children. *Current Opinion in Pediatrics*, 23(6), 684–692. <https://doi.org/10.1097/MOP.0b013e32834cbbba>
- Kilanowski, J. F. (2017). Breadth of the socio-ecological model. *Journal of Agromedicine*, 1059924X.2017.1358971. <https://doi.org/10.1080/1059924X.2017.1358971>
- Klein, S. (n.d.). *Management of ADHD in Preschool-Aged Children*. 3.
- LaForett, D. R., Murray, D. W., & Kollins, S. H. (2008). Psychosocial treatments for preschool-aged children with Attention-Deficit Hyperactivity Disorder. *Developmental Disabilities Research Reviews*, 14(4), 300–310. <https://doi.org/10.1002/ddrr.36>
- Lahey, B. B. (2004). Three-Year Predictive Validity of DSM-IV Attention Deficit Hyperactivity Disorder in Children Diagnosed at 4-6 Years of Age. *American Journal of Psychiatry*, 161(11), 2014–2020. <https://doi.org/10.1176/appi.ajp.161.11.2014>
- Lahey, B. B., Lee, S. S., Sibley, M. H., Applegate, B., Molina, B. S. G., & Pelham, W. E. (2016). Predictors of adolescent outcomes among 4–6-year-old children with attention-

- deficit/hyperactivity disorder. *Journal of Abnormal Psychology*, 125(2), 168–181.  
<https://doi.org/10.1037/abn0000086>
- Mayes, S. D., Crites, D. L., Bixler, E. O., Humphrey, F. J., 2nd, & Mattison, R. E. (1994). Methylphenidate and ADHD: influence of age, IQ and neurodevelopmental status. *Developmental medicine and child neurology*, 36(12), 1099–1107.  
<https://doi.org/10.1111/j.1469-8749.1994.tb11811.x>
- McKinney, B., & Peterson, R. A. (1987). Predictors of stress in parents of developmentally disabled children. *Journal of pediatric psychology*, 12(1), 133–150.  
<https://doi.org/10.1093/jpepsy/12.1.133>
- McGoey, K. E., Eckert, T. L., & Dupaul, G. J. (2002). Early Intervention for Preschool-Age Children with ADHD: A Literature Review. *Journal of Emotional and Behavioral Disorders*, 10(1), 14–28. <https://doi.org/10.1177/106342660201000103>
- Melchior, M., Chastang, J. F., Falissard, B., Galera, C., Tremblay, R. E., Côté, S. M., & Boivin, M. (2012). Food insecurity and children's mental health: A prospective birth cohort study. *PLoS One*, 7(12), e52615. <https://doi.org/10.1371/journal.pone.0052615>
- Moreno, C., Wykes, T., Galderisi, S., Nordentoft, M., Crossley, N., Jones, N., Cannon, M., Correll, C. U., Byrne, L., Carr, S., Chen, E. Y. H., Gorwood, P., Johnson, S., Kärkkäinen, H., Krystal, J. H., Lee, J., Lieberman, J., López-Jaramillo, C., Männikkö, M., ... Arango, C. (2020). How mental health care should change as a consequence of the COVID-19 pandemic. *The Lancet Psychiatry*, 7(9), 813–824. [https://doi.org/10.1016/S2215-0366\(20\)30307-2](https://doi.org/10.1016/S2215-0366(20)30307-2)
- Paquette, D., & Ryan, J. (n.d.). *Bronfenbrenner's Ecological Systems Theory*. 59.



- Polanczyk, G., de Lima, M. S., Horta, B. L., Biederman, J., & Rohde, L. A. (2007). The Worldwide Prevalence of ADHD: A Systematic Review and Metaregression Analysis. *Am J Psychiatry*, 7.
- Posner, K., Melvin, G. A., Murray, D. W., Gugga, S. S., Fisher, P., Skrobala, A., Cunningham, C., Vitiello, B., Abikoff, H. B., Ghuman, J. K., Kollins, S., Wigal, S. B., Wigal, T., McCracken, J. T., McGough, J. J., Kastelic, E., Boorady, R., Davies, M., Chuang, S. Z., ... Greenhill, L. L. (2007). Clinical Presentation of Attention-Deficit/Hyperactivity Disorder in Preschool Children: The Preschoolers with Attention-Deficit/Hyperactivity Treatment Study (PATs). *Journal of Child and Adolescent Psychopharmacology*, 17(5), 547–562. <https://doi.org/10.1089/cap.2007.0075>
- Rowland, A. S., Skipper, B. J., Rabiner, D. L., Qeadan, F., Campbell, R. A., Naftel, A. J., & Umbach, D. M. (2018). Attention-Deficit/Hyperactivity Disorder (ADHD): Interaction between socioeconomic status and parental history of ADHD determines prevalence. *Journal of Child Psychology and Psychiatry*, 59(3), 213–222. <https://doi.org/10.1111/jcpp.12775>
- Russell, A. E., Ford, T., Williams, R., & Russell, G. (2016). The Association Between Socioeconomic Disadvantage and Attention Deficit/Hyperactivity Disorder (ADHD): A Systematic Review. *Child Psychiatry & Human Development*, 47(3), 440–458. <https://doi.org/10.1007/s10578-015-0578-3>
- Spencer, A. E., Oblath, R., Sheldrick, R. C., Ng, L. C., Silverstein, M., & Garg, A. (2021). Social Determinants of Health and ADHD Symptoms in Preschool-Age Children. *Journal of Attention Disorders*, 108705472199645. <https://doi.org/10.1177/1087054721996458>

- Spencer, A. E., Sikov, J., Loubeau, J. K., Zolli, N., Baul, T., Rabin, M., Hasan, S., Rosen, K., Buonocore, O., Lejeune, J., Dayal, R., Fortuna, L., Borba, C., & Silverstein, M. (2021). Six Stages of Engagement in ADHD Treatment Described by Diverse, Urban Parents. *Pediatrics*, *148*(4), e2021051261. <https://doi.org/10.1542/peds.2021-051261>
- Spencer, T. J., Biederman, J., & Mick, E. (2007). Attention-Deficit/Hyperactivity Disorder: Diagnosis, Lifespan, Comorbidities, and Neurobiology. *Journal of Pediatric Psychology*, *32*(6), 631–642. <https://doi.org/10.1093/jpepsy/jsm005>
- Tandon, M., Si, X., & Luby, J. (2011). Preschool Onset Attention-Deficit/Hyperactivity Disorder: Course and Predictors of Stability over 24 Months. *Journal of Child and Adolescent Psychopharmacology*, *21*(4), 321–330. <https://doi.org/10.1089/cap.2010.0045>
- Whittemore, R., Chase, S. K., & Mandle, C. L. (n.d.). *Validity in Qualitative Research*. 16.
- Wilens, T. E., Biederman, J., Brown, S., Tanguay, S., Monuteaux, M. C., Blake, C., & Spencer, T. J. (2002). Psychiatric comorbidity and functioning in clinically referred preschool children and school-age youths with ADHD. *Journal of the American Academy of Child & Adolescent Psychiatry*, *41*(3), 262–268. <https://doi.org/10.1097/00004583-200203000-00005>
- World Health Organization. (n.d.). *Social Determinants of Health*. World Health Organization. Retrieved May 3, 2022, from [https://www.who.int/health-topics/social-determinants-of-health#tab=tab\\_1](https://www.who.int/health-topics/social-determinants-of-health#tab=tab_1)