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## Abstract

*Background:* Pediatric attention deficit / hyperactivity disorder (ADHD) is a prevalent, impairing disorder with significant public health burden. Unfortunately, there is considerable delay to treatment and a low rate of lifetime treatment contact for individuals with ADHD, especially among ethnic minorities. The Asian Indian American (AIA) population, one of the fastest growing minority populations in the United States, has been ignored completely in ADHD help-seeking research. To fill this void, the Theory of Planned Behavior (TPB) framework was used to examine how attitudes, subjective norms, and perceived behavioral control affect help-seeking intentions for ADHD in AIAs.

*Method:* 191 parents (53% AIA) of children aged 5-12 years at risk for ADHD yet who have not sought treatment for their child's elevated ADHD symptoms, were recruited from advertising on social media websites and snowball methods. Parents completed an online survey to assess their (a) recognition of ADHD, (b) knowledge of ADHD etiology, (c) attitudes towards ADHD treatment, (d) subjective norms regarding ADHD treatment, (e) perceived control over their ADHD help-seeking behavior, and (f) intention to seek help for their child's elevated ADHD symptoms.

*Results:* Perceived behavioral control independently predicted intention to seek help, and this association was moderated by ethnicity. European American parents' help seeking intentions were more impacted by their perceived behavioral control over possible obstacles. Subjective norms and attitudes were not significantly associated with intention to seek help. AIA parents endorsed lower levels of biopsychosocial etiology beliefs and were less likely to recognize ADHD compared to European American parents.

*Conclusions:* Perceived behavioral control may be more impactful for European American parents than AIA parents. Perceived behavioral control was positively associated with help-seeking in European American parents. AIA parents demonstrated negative associations between all TPB variables and help-seeking intentions, indicating that the TPB or its measure may not adequately address factors affecting help-seeking intentions among AIAs.

*Keywords:* ADHD, help-seeking, Asian Indian, Asian American, parents

Parental Help-Seeking Intentions for ADHD in Asian Indian American Parents: Application of  
the Theory of Planned Behavior

by

Nandini Jhavar

B.A., Hofstra University, 2018

Master's Thesis

Submitted in partial fulfillment of the requirements for the degree of  
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Parental Help-Seeking Intentions for Childhood ADHD in Asian Indian American Parents:  
Application of the Theory of Planned Behavior

## **ADHD**

Attention Deficit/Hyperactivity Disorder (ADHD) is the most commonly diagnosed childhood disorder (Spencer et al., 2007) with prevalence rates as high as 11% in epidemiological studies (Visser et al., 2014). Symptoms of ADHD significantly impair functioning in educational, social, emotional, and family domains (Klein et al., 2012). Additionally, a diagnosis of ADHD has been associated with psychiatric comorbidities such as anxiety and mood disorders (Larson et al., 2011), and negative health outcomes such as increased substance use, accidental injuries, obesity, and suicide (Nigg, 2013). Evidence-based pharmacological and behavioral treatment during childhood and adolescence can lessen the impact of such consequences (Shaw et al., 2012; Wilens et al., 2003). However, rates of lifetime treatment contact for ADHD remain low across populations, with only about half of individuals meeting criteria for ADHD ever making treatment contact and experiencing long delays to treatment (P. S. Wang et al., 2005).

Ethnoracial minority populations, or people whose geographical origins, language, or culture differs from that of the majority (Bhopal, 2004), in the United States are undertreated for ADHD (Slobodin & Masalha, 2020). The Asian Indian population is one of the fastest growing ethnic minorities in the United States, with a population that has doubled from 2000 to 2015 (Lopez et al., 2017). However, Asian Indian Americans (AIAs) are understudied in the ADHD literature, and no research has considered ADHD help-seeking behavior in AIA parents. Based upon broader literature on mental health help-seeking (Kumar & Reid, 2020; Loya et al., 2010),

it is likely that ADHD is underdiagnosed and therefore undertreated in AIAs. Applying a conservative estimate of ADHD prevalence (5%) (Polanczyk et al., 2014) to the AIA population of three million people (Lopez et al., 2017), results in approximately 150,000 AIAs who may be at risk for ADHD. Given the high prevalence of ADHD and multitude of associated negative long-term outcomes, as well as a rapidly growing AIA population, the potential for undertreatment of ADHD in AIAs is an important public health issue to study.

### ***ADHD Background and Etiology***

ADHD is a neurodevelopmental disorder that typically emerges in childhood, is characterized by symptoms of inattention, hyperactivity, and/or impulsivity that are present before age 12 and negatively impact functioning (American Psychiatric Association, 2013). These symptoms may present in a wide variety of combinations, producing considerable heterogeneity in the disorder. The worldwide pooled prevalence rate of ADHD in children is 5.29%, though there is some variability in prevalence by country with rates generally the highest in the United States (Polanczyk et al., 2014). Although executive functioning deficits are not present in all children with ADHD (Lambek et al., 2011), theories of ADHD cite executive dysfunction as central to ADHD and characteristic of the disorder at a group level (Willcutt et al., 2005).

ADHD has a complex and multifactorial etiology, involving genetic components, neurobiological pathways, and environmental and psychosocial factors (Banaschewski et al., 2017), with various combinations of causal factors likely also contributing to the heterogenous presentation of ADHD in individuals. Genes have a substantial role in the transmission of ADHD, estimating the disorder's heritability to be approximately 76% (Biederman & Faraone, 2005). In addition to biological theories, a number of environmental factors have been implicated

in the etiology of the disorder. These primarily include perinatal risk factors (maternal stress, fetal exposure to alcohol or nicotine, premature birth), psychosocial adversity (marital distress, family dysfunction, exposure to parental psychopathology, and low socioeconomic status), and environmental toxins (lead, organophosphates), Genetic, neurobiological, and environmental factors likely interact through complex mechanisms in the development of ADHD.

### ***Longitudinal Outcomes of ADHD***

Though ADHD was originally characterized as a childhood-limited disorder (Hill & Schoener, 1996), there is substantial evidence for persistence into adolescence and adulthood (Kessler et al., 2006; Simon et al., 2009). The developmental trajectories of ADHD can vary, with 35% of children with ADHD continuing to meet full *DSM* criteria at an 11-year follow up, 22% still showing some symptoms, and 15% still experiencing functional impairment (Biederman et al., 2011). Psychiatric comorbidity, severity of ADHD impairment in childhood, and maternal psychopathology have been identified as some of the risk factors predicting persistence of ADHD (Biederman et al., 2011).

ADHD is associated with psychiatric comorbidities such as conduct disorder, substance use disorder, antisocial personality disorder, mood disorders and anxiety disorders (Larson et al., 2011). ADHD symptom severity in childhood is negatively associated with educational attainment, with higher rates of high school dropout (Fredriksen et al., 2014) and lower likelihood of enrolling in a four-year college (Kuriyan et al., 2013). Young adults with ADHD are also more likely to be unemployed or have lower vocational status if they are employed (Kuriyan et al., 2013). Additionally, untreated ADHD is associated with poorer long term self-esteem and social functioning outcomes (Klein et al., 2012). Clearly untreated ADHD has

potentially severe long-term outcomes across functional domains, making early identification and treatment important.

### ***ADHD Treatment***

There exists an array of evidence-based pharmacological and nonpharmacological treatments for ADHD that vary in effectiveness and perceived acceptability by children and their parents. The *American Academy of Pediatrics* (Wolraich et al., 2019) and the *American Academy of Child and Adolescent Psychiatry* (Pliszka & AACAP Work Group on Quality Issues, 2007) both recommend stimulant medications as a front-line intervention for children and adolescents with ADHD. Despite the well-established efficacy and safety of stimulants for ADHD, 10-30% of children may not respond to stimulants or may be unable to tolerate adverse side effects (Banaschewski et al., 2004). Nonstimulant medication such as guanfacine, atomoxetine, and clonidine have also shown effectiveness and constitute an alternative pharmacotherapy for ADHD (Pliszka & AACAP Work Group on Quality Issues, 2007).

A meta-analysis of nonpharmacological treatments for ADHD supports their efficacy (Hodgson et al., 2014). Behavior modification (using positive and negative reinforcement, and punishment to change behavior) and neurofeedback treatments (learning to increase beta activity and reduce theta activity to enhance attention and concentration) were most supported by evidence (Hodgson et al., 2014). Support for nonpharmacological treatments such as behavioral parent training and working memory training has been more mixed (Hoath & Sanders, 2002; Hodgson et al., 2014; Klingberg et al., 2005).

Though medication treatments are regarded as the most effective for ADHD symptoms, combining medication with nonpharmacological treatment such as behavior modification may be beneficial for children with comorbid disorders, and combined treatment is associated with

greater teacher and parent satisfaction ratings (Jensen et al., 2007). In sum, pharmacological treatment interventions have demonstrated stronger efficacy in treating ADHD and should be used as the first-line treatment option (Pliszka & AACAP Work Group on Quality Issues, 2007). Nonpharmacological interventions may be used as a supplementary treatment for ADHD (Jensen et al., 2007).

### ***Impact of ADHD Treatment on Outcomes***

In a comprehensive systematic review of long-term outcomes of treated and non-treated ADHD, Shaw and colleagues (2012) determined that (a) without treatment, individuals with ADHD had poorer long-term outcomes across all domains compared to people without ADHD, and (b) treatments for ADHD improved long-term outcomes compared to untreated ADHD, though not to the level of typical functioning. Driving impairments and obesity outcomes were reported to be responsive to treatment 100% of the time, followed by self-esteem (90%), social functioning (83%), and academic outcomes (71%) (Shaw et al., 2012). Studies within the systematic review reported a deterioration in academic outcomes for untreated ADHD (Powers et al., 2008; Schultz et al., 2009; Weithorn & Marcus, 1985). Tobacco use also increased in individuals with untreated ADHD over the course of two years (Whalen et al., 2003).

Overall, it is clear that treating ADHD supports better long-term outcomes, yet a significant percentage of those with ADHD are never treated. For example, the National Comorbidity Survey Replication (NCS-R) study suggests that only 51.8% of people who meet criteria for ADHD will ever make treatment contact (P. S. Wang et al., 2005). Similarly, the National Epidemiologic Survey on Alcohol and Related Conditions reported that only 55% of people will ever make treatment contact with ADHD and found the median delay from

symptoms onset to treatment for ADHD is estimated at 10.5 years for young adults (Dakwar et al., 2014).

There likely exist numerous and varied reasons for the long delay to treatment and low rates of lifetime engagement in ADHD treatment. Parents serve as gatekeepers to treatment for their children, making their attitudes towards and behaviors of seeking help an important area of study. Most of the research on parental decision making about treatment has focused on samples who are (a) already engaged with treatment and/or (b) Caucasian, Latinx and African American parents. Far less information is presently available about parents who have not yet engaged with treatment (despite having a symptomatic child) and the role of race/ethnicity beyond Latinx and African American. Furthermore, the existing research on help-seeking intentions and behaviors in ethnoracial minority parents is largely atheoretical, limiting our understanding of the influence of various factors affecting the help-seeking process. The current proposed study aims to fill all three of these voids in the extant literature.

### **Theory of Planned Behavior**

Ajzen's (1991) Theory of Planned Behavior (TPB) has been applied to the study of a variety of health behaviors such as smoking (Hilley et al., 2019), exercise (Thompson et al., 2020), and treatment initiation for depression (Tomczyk et al., 2020). While the TPB has been criticized by some, based on whether correlational results can explain behaviors (Weinstein, 2007), meta-analyses show that the TPB accounts for up to 40% variance in health behaviors (Armitage & Conner, 2000), and that changing TPB constructs leads to subsequent change in health behaviors (Mosleh et al., 2014).

The TPB suggests that the primary determinant of participation in a health behavior (in this case, parental help-seeking for their child's elevated ADHD symptoms) is intention to

engage in the behavior, which is determined by three variables (see Figure 1). The first TPB variable is attitudes, or overall evaluations of the health behavior. The second is subjective norms, or beliefs about whether important individuals in one's life believe the target individual should engage in the behavior. The third variable is perceived behavioral control, or the perception that performance of the behavior is within one's control and capacity, is similar to the concept of self-efficacy (Bandura, 1977). Examining engagement in help-seeking behavior for ADHD (e.g., visiting a healthcare provider) is beyond the scope of this thesis; thus, the precursor to engaging in the behavior, help-seeking intentions, will be considered (see Figure 1).

The following section expands on each component of the TPB and parental symptom recognition as factors affecting help-seeking intentions and behaviors for ADHD among European American and ethnic minority parents in the United States. As noted above, studies of help-seeking behaviors and intentions for ADHD largely focus on African American and Latinx populations and AIA has not been previously considered. To better frame hypotheses, predicted ADHD related help-seeking intentions in AIAs are based upon research from the broader mental health help-seeking behavior in AIAs and ADHD help-seeking behavior in Indian parents not residing in the United States.

### ***Attitudes***

The TPB adopts an expectancy-value formulation of help-seeking attitudes whereby attitudes toward a behavior are a function of beliefs regarding the behavior's likely consequences. Overall attitudes are formed by aggregating the positive and negative evaluation of each anticipated outcome of the behavior (Ajzen, 1991). Within help-seeking for ADHD, attitudes may be formed through parental knowledge and perceptions of ADHD and associated expectations of treatment acceptability and efficacy.



**Knowledge of ADHD and Acceptability of Treatment.** Parental knowledge and perceptions of ADHD influence parents' decisions to initiate treatment (McLeod et al., 2007), and poor knowledge of ADHD can contribute to delayed diagnosis (Park et al., 2018). Socioeconomic status, educational attainment, being female, and familiarity (e.g., having exposure to friend or family member with ADHD) are positively associated with possessing accurate knowledge of ADHD (McLeod et al., 2007; Park et al., 2018). Individuals who are more knowledgeable about ADHD are more likely to endorse biological or environmental etiology, and support both counseling and medication treatments (McLeod et al., 2007).

Conversely, lower levels of knowledge about ADHD and evidence-based treatment, and higher levels of misconceptions regarding ADHD treatment (e.g., use of stimulant medication leads to future substance abuse) are associated with lower perceived acceptability of ADHD medication treatment (Sciutto, 2015). Liu and colleagues (1991) compared acceptability of methylphenidate, behavior management, and their combination among mothers of elementary-school aged children. They found that methylphenidate was rated as least acceptable to manage ADHD (Liu et al., 1991). Similarly, Pescosolido and colleagues (2007) found that adults perceived that psychiatric medications were not acceptable for treating children. Despite limited evidence supporting negative treatment outcomes, respondents believed that psychiatric medications affect development negatively, increase risk for subsequent substance abuse, give children a flat, "zombie"-like affect, and delay solving "real" behavior-related problems (Pescosolido, Perry, et al., 2007).

Importantly, Liu and colleagues (1991) demonstrated that parents' acceptability of medication and combined treatment significantly increased after experience with these interventions. This acceptability increase was associated with an increase in knowledge, but not

associated with an actual reduction in symptoms. Given the association between knowledge and acceptability of treatment, learning about both the benefits of medication and the risks of *not* using medication may help parents understand why medication might be an important ADHD treatment consideration.

Members of ethnoracial minority groups are less likely to have accurate knowledge of ADHD and may attribute symptoms of ADHD to psychosocial factors such as familial conflict, parenting styles, or stressful life events (Bussing, Gary, et al., 2003; Wilcox et al., 2007). These attributions are negatively associated with help-seeking behavior. Concerns regarding pharmacological treatment for ADHD are also heightened in ethnoracial minority populations. Minority parents with negative perceptions of medication are less likely to use ADHD mental health services (Berger-Jenkins et al., 2012) and are less likely to opt for medication treatment compared to nonpharmacological treatments for ADHD (Bussing, Gary, et al., 2003).

These previous findings suggest that knowledge of ADHD and perceived acceptability of treatment are associated with help-seeking behaviors and intentions and important to consider. The present study will examine the generalizability of these findings in AIA parents as their knowledge of and attitudes towards ADHD treatment are far less well understood.

### ***Subjective Norms***

In the TPB framework, subjective norms are characterized as an interaction between normative beliefs, or perceptions of whether others perform the same behavior, and the importance of these others to the individual. In examining parental help-seeking for ADHD, subjective norms take into account if important individuals in one's life (e.g., friends, family, coworkers) would seek help for similar behaviors in their children, and the degree of significance each individual holds to the parent.

Past research has generally found subjective norms to be least predictive of the three TPB constructs towards intentions to seek treatment for various health behaviors (Armitage & Conner, 2000). However, studies of mental health help-seeking among Chinese found subjective norms to be a significant predictor of intention to seek help, possibly due to collectivistic cultural values (Mo & Mak, 2009). As collectivistic cultures value interpersonal relatedness, greater stigmatization of mental illness may lead to negative interpersonal evaluations and increase the influence of subjective norms (Mak & Davis, 2014). AIAs also follow a collectivistic culture (Kumar & Nevid, 2010), yet the relationship between AIA stigma and parental help-seeking has not been clearly elucidated. Stigmatizing beliefs about ADHD and its treatment espoused by the public inform parents' perceived understanding of whether close others support their decisions to seek help.

**Stigma.** Public stigma is significant barrier to seeking help for pediatric psychiatric disorders and is the most commonly cited reason for parents not accessing pediatric mental health treatment (Reardon et al., 2017). Data from the National Stigma Study – Children (NSS-C) indicates that the general public perceives children with ADHD to be more dangerous to themselves and others compared to children with asthma or “daily troubles” (Pescosolido et al., 2007). Results from the NSS-C also found that approximately 25% of adult respondents did not want their children to be friends with a child with ADHD (Martin et al., 2007). Such negative public opinions increase parental worries about treatment (Taylor & Antshel, 2019). In addition, the general public also places more blame on parents of children with ADHD for their child's condition compared to parents of children with asthma or depression (Mukolo & Heflinger, 2011).

Parents of children with ADHD may internalize the public stigma expressed towards individuals with ADHD. Affiliate stigma, also called courtesy stigma, refers to social devaluation experienced and internalized by family members of the individual with a mental illness (Corrigan & Miller, 2004). This social devaluation arises from the public's discrediting of parents' whose children with ADHD are unable to fit into social norms (Mueller et al., 2012). Affiliate stigma in caregivers of children with ADHD increased unfavorable attitudes towards both pharmacological and behavioral therapy (Chang et al., 2020). Female caregivers are especially likely to experience affiliate stigma in relation to their child's ADHD (Chang et al., 2020), making them more vulnerable to blame and social exclusion (Koro-Ljungberg & Bussing, 2009). Parents of children with ADHD also described affiliate stigma as a motivation to deny their child's diagnosis (Lebowitz, 2016). Affiliate stigma is especially relevant among Asian American populations as collectivistic cultural values emphasize the self as interdependent with other members of the family, thus extending stigma of mental illness beyond the affected individual to other members of the family (Chang et al., 2020; Chaudhry & Chen, 2019).

Ethnoracial minority parents experience additional stigma in the form of pressures from family and friends to refrain from seeking ADHD treatment due to fears that diagnosis may jeopardize future employment, fears that ADHD medication may result in adverse health outcomes, and concerns that their parenting skills will be questioned (Cadet et al., 2019; Slobodin & Masalha, 2020; Wilcox et al., 2007). Ethnoracial minority parents' fear of future stigma and discrimination may increase treatment avoidance for their children with ADHD by increasing the influence of already salient subjective norms. The present study expands this research by assessing subjective norms as an influence on ADHD help-seeking intentions in AIA parents.

### ***Perceived Behavioral Control***

The TPB assumes that intention to engage in a behavior, such as help-seeking, is also influenced by perceived behavioral control (PBC). PBC is the belief in being able to overcome obstacles to engaging in behavior. Although research on help-seeking for ADHD has highlighted several external barriers to seeking help (e.g., cost, time), perceptions of control over these obstacles has not been examined in Asian Indian Americans. Self-efficacy is closely related to PBC and represents the level of perceived confidence in overcoming structural obstacles to perform the behavior. Together, self-efficacy and structural barriers form the TPB component of perceived behavioral control.

**Structural Barriers to Treatment.** Structural barriers to treatment encompass the logistical requirements of treatment. Families identify cost as the main reason for not receiving treatment (Bussing, Zima, et al., 2003; Corkum et al., 2015). The annual medical costs for children with ADHD tend to be double the cost for children without ADHD due to more prescription-related and out-of-pocket expenses (Corkum et al., 2015). Parents of children with ADHD have increased medical costs due to stress of caring for a child with ADHD, lower occupational functioning, and lack of knowledge and support for their child's ADHD related needs from employers (Corkum et al., 2015). Lack of support and guidance from teachers, time (Corkum et al., 2015), limited availability of specialists, and acceptance of insurance (Bussing, Zima, et al., 2003) also form barriers to seeking treatment for ADHD. Families with low SES face greater barriers of financing ADHD treatment (Bussing, Zima, et al., 2003). Some ethnoracial minorities in the United States, such as African American and Latinx populations, are more likely to be impacted by low SES, while others, such as Asian American populations, tend to have higher SES (*Ethnic and Racial Minorities & Socioeconomic Status*, 2017). AIAs in particular, have the highest educational attainment among Asian Americans, and most are

employed in management, professional, and related occupations (Desilver, 2014). Thus, previous ethnoracial minority research on African American and Latinx populations may not be readily generalizable to AIAs who tend to have higher SES.

**Self-Efficacy.** Self-efficacy of seeking treatment has not been examined in parents of children with ADHD. A study examining mental health treatment in Chinese adults demonstrated that the degree of personal confidence in the ability to seek help influenced intentions to seek psychological treatment (Mo & Mak, 2009). Similarly, another study on Korean and African American college students found high self-efficacy for seeking treatment was positively associated with intentions to seek treatment for psychological distress (Mesidor & Sly, 2014).

The present study aims to measure PBC as a combination of structural barriers and the confidence to overcome these barriers (self-efficacy) to seek help for ADHD, among both AIA and European American parents.

### **Effect of Symptoms on Parents**

Impact of child ADHD symptoms on parents (Sayal et al., 2006) and caregiver strain (Paidipati et al., 2017) may also be salient influencers of ADHD help-seeking intentions. Symptom severity has been associated with help-seeking such that children who meet criteria for categorical diagnoses of ADHD are more likely to seek services (Bussing, Gary, et al., 2003). This may be indicative of the impact on parents and level of caregiver strain associated with functional impairments. However, symptom severity measured dimensionally (with no consideration of impairments associated with the symptoms) is not associated with service use (Capriotti & Pfiffner, 2019). Endorsement of impairment caused by ADHD symptoms, which is required to meet *DSM-5* criteria for categorical ADHD diagnoses, may explain the

categorical/dimensional discrepancy in help-seeking. Thus, greater impairment from ADHD is likely to produce greater strain in parents, motivating them to seek help for their child.

### **Disparities in Treatment Utilization**

Disparities in ADHD diagnosis and treatment rates among ethnic minorities are an area of specific concern (Eiraldi et al., 2006; Slobodin & Masalha, 2020; Zito et al., 1998). Cross-cultural studies in the United States have demonstrated major disparities in diagnosis and treatment for ADHD between minority children and European Americans as early as kindergarten (Coker et al., 2016; Morgan et al., 2013), with lower rates of diagnosis being attributed to underdiagnosis in minorities rather than overdiagnosis in European Americans (Coker et al., 2016).

Previous ethnoracial ADHD diagnosis and treatment research has largely been limited to African American and Latinx children (Morgan et al., 2013), and there is insufficient literature investigating ADHD among Asian Americans (Pham, 2013). Though prevalence rates of ADHD in Asian countries such as China or India are comparable to, or higher than, the worldwide prevalence (Kuppili et al., 2017; T. Wang et al., 2017), Asian Americans generally report far lower rates of ADHD diagnoses compared to European Americans (OR: 0.248; 95% CI: 0.240-0.257;  $p < .001$ ) and other minority groups in the United States (Chung et al., 2019). This discrepancy in prevalence and diagnosis of ADHD among Asian Americans may indicate reluctance to seek help for impairing symptoms. Understanding factors that hinder and encourage help-seeking is essential to closing this gap.

Asian Americans constitute at least 28 different ethnic groups, and despite sharing some cultural characteristics, these subgroups are distinctive with regard to conceptualizations of mental illness (Pham, 2013) and willingness to use mental health services (Lee et al., 2015).

However, research regarding mental health help-seeking behavior in Asian Americans has focused primarily on aggregated groups, with little consideration of differences among ethnic subgroups (Chaudhry & Chen, 2019), or has focused on individuals of Chinese or Korean descent (Kiang et al., 2017). To date, no research has considered ADHD help-seeking behavior in AIA parents. It is critical that research keep up with the needs of the Indian diaspora to inform education and health programs for AIAs.

### **Help Seeking in Asian Indian Americans**

As a demographically and historically distinct group, AIAs have received little attention in mental health research, with no research on parental help-seeking for ADHD to date. Approximately 70% of AIAs today are foreign born (Lopez et al., 2017), and many develop a bicultural competence in which they are able to function adaptively and maintain their traditional identity in the host society (Alexander et al., 2020; Raval et al., 2018). As parents, AIAs may feel the need to instill traditional cultural values in their children and maintain an “Indian home” (Raval et al., 2018). Thus, research on parental help-seeking for ADHD in India may provide valuable insights into AIA parents’ traditional values. At the same time, AIA parents’ acculturation, or adaptation into the majority culture, may alter their perceptions of mental health (Kumar & Nevid, 2010). While findings from an Asian context cannot directly be applied to AIAs, the following section synthesizes mental health help seeking research from parents in India and AIA parents in the United States to discuss factors that may influence help-seeking.

Two studies on mental health help-seeking among AIAs in general provide some insights and bases for hypotheses. AIAs are willing to seek psychological help (Nair et al., 2007) and may do so at higher rates than other Asian American subgroups (Lee et al., 2015). Nevertheless, inaccurate knowledge of psychiatric disorders (Kumar & Nevid, 2010), negative attitudes



towards pharmacological (Conrad & Pacquiao, 2005) and nonpharmacological treatment (Kumar & Reid, 2020), as well as experiences of stigma (Turner & Mohan, 2016), form barriers to accessing mental health treatment for AIAs and often lead to earlier treatment attrition than other Asian American subgroups and ethnoracial minorities in the United States (Kim et al., 2016). It is unclear how AIAs differ from other non-Asian ethnic minority groups in the United States due to aggregate comparisons that subsume AIAs into the Asian American group.

### ***Knowledge of ADHD***

Studies have not yet evaluated knowledge of ADHD in AIA populations. However, research from India demonstrates that accurate knowledge of ADHD is associated with help-seeking in parents. Indian parents most commonly explain symptoms of ADHD as naughtiness, as part of the normal growth process that would resolve itself, or a result of lenient parenting (Anand et al., 2018; Arya et al., 2015). Though ADHD biological etiology (genetics, neurological defects) is supported by some Indian parents, most are resistant to adopting an illness model of ADHD (Wilcox et al., 2007). In one study, Indian parents are more willing to adopt a biological model after receiving psychoeducation from pediatricians and psychiatrists and are less likely to blame their child and themselves after being introduced to biological explanations of ADHD (Shah et al., 2019). However, biological explanations largely remain a source resistance in Indian parents. Other etiological beliefs espoused by Indian parents include maternal stress and depression, paternal substance use, family discord, excessive child video game use, inadequate diet, lack of motivation in child, inefficient teachers (Shah et al., 2019), and supernatural causes such as God's will (Wilcox et al., 2007). As accurate knowledge of ADHD is associated with increased professional help-seeking in Indian parents and among

parents of other ethnoracial minorities in the United States, it is important to investigate this relationship in AIA parents.

### ***Treatment Attitudes***

Both AIAs and Indians hold negative attitudes towards mental health treatment, and often consider mental health treatment to be the last resort for when symptoms reached an unbearable threshold (Kumar et al., 2020; Shah et al., 2019). AIA parents are likely to hold negative attitudes towards child mental health services if they do not have any past mental health service use for themselves (Turner & Mohan, 2016).

ADHD specific research is non-existent in AIA parents. However, Indian parents recognize symptoms of ADHD and impairment in their children and identify a definite need for help (Mahapatra et al., 2020) for behavioral and academic issues (Shah et al., 2019; Wilcox et al., 2007). Indian parents demonstrate more willingness towards educational and religious interventions for ADHD, and express fear towards the potential for addiction with medications (Kuppili et al., 2017; Wilcox et al., 2007). Higher ADHD symptom severity and presence of comorbidities significantly predict earlier help-seeking (Anand et al., 2018; Arya et al., 2015). Hyperactivity in children increases concern and predicts early help-seeking by Indian parents (Arya et al., 2015; Wilcox et al., 2007). These Indian parent concerns are primarily driven by concerns about functioning at school, and teachers are the most common referral source (Anand et al., 2018; Arya et al., 2015; Wilcox et al., 2007).

### ***Stigma***

Negative attitudes towards treatment may partially be driven by experiences of stigma. Attitudes towards psychological counseling in AIA college students are significantly associated

with personal stigma (an individual's own stigmatizing views towards treatment), but not perceived stigma of societal discrimination towards individuals with mental illness (Loya et al., 2010). Both Indian and AIA parents consult friends, family, and religious leaders before engaging with professional mental health treatment. These alternative, non-professional, sources of support often blame the child or parent (Wilcox et al., 2007), and may reinforce community cultural norms of overcoming mental health disorder symptoms through resiliency rather than the aid of outside resources (Kumar et al., 2020). Increased stigma towards seeking professional psychiatric help may also be a result of reduced community support (Shah et al., 2019). Other studies, however, have found that stigma is not associated with AIA mental health help seeking (Nair et al., 2007; Turner & Mohan, 2016). One study attributed the lack of association to changing cultural beliefs among the Indian diaspora and traditional Indian culture to be more positively inclined towards seeking and accepting mental health treatment (Nair et al., 2007). Furthermore, this study did not find associations between level of acculturation and attitudes towards mental health treatment, indicating that first- and second-generation immigrants from India hold similar beliefs about mental health treatment (Nair et al., 2007). Conversely, a second study attributed the lack of association between stigma and help seeking intentions to consistently greater experiences of stigma across AIA parents, regardless of past service use (Turner & Mohan, 2016). The present study aims to further our understanding of the presently unclear relationship between stigma and AIA help seeking intentions.

### **Summary of Significance and Innovation**

Childhood ADHD is characterized by high prevalence, broad functional impairment, likelihood of psychological comorbidities, and increased risk for negative long-term consequences rendering it of significant public health importance (Biederman & Faraone, 2005;

Kessler et al., 2006; Spencer et al., 2007). However, despite the (a) considerable public health impact of ADHD, (b) the availability of effective evidence based treatments (Faraone, Sergeant, Gillberg, & Biederman, 2003), and (c) negative long-term impacts of untreated ADHD (Shaw et al., 2012), there is significant delay to treatment and low lifetime rate of treatment contact in the ADHD population (Coker et al., 2016; Dakwar et al., 2014).

Despite comparable prevalence rates of ADHD among ethnoracial minorities in the United States, ethnoracial minorities are less likely to seek help for ADHD due to less worrisome perceptions of ADHD symptoms, unfamiliarity with the etiology and treatment of ADHD, more experiences of stigma, and less acceptability of seeking help for mental disorders (Coker et al., 2016). Previous research on ethnoracial populations in the United States has largely focused on African American and Latinx populations (Slobodin & Masalha, 2020). Asian Americans are underrepresented in help-seeking research for ADHD (Kumar & Nevid, 2010), with Asian Indian Americans (AIAs) completely unexplored. Given the rapidly increasing population of AIAs and their underrepresentation in mental health treatment research, it is important to better understand factors that influence AIA parental help seeking decisions.

The current study aims to investigate how TPB factors relate to help-seeking intentions among AIA and European American parents. The first aim is to measure the association of attitudes, subjective norms, and perceived behavioral control with intention to seek help among all parents. The second aim is to compare differences in the TPB model among AIA and European American parents. To our knowledge, this is the first ADHD study that will examine these factors together in an AIA population, using a theoretical framework.

Furthermore, the study will focus on a population of parents of children who have not been evaluated for ADHD despite having currently elevated symptoms (parents of “treatment-

naïve” youth). Existing ADHD treatment studies have focused on general population attitudes (e.g., unrelated to their own children) or parents whose children are currently being assessed for or already have a diagnosis of ADHD (e.g., parents that have already made the choice to seek treatment). Mental health treatments only work for those who access them. Therefore, research on help-seeking behavior is inherently limited by only studying retrospective accounts of help-seeking from parents who have already overcome any barriers to treatment. The reasons that people who need, but do not seek, treatment for their children with ADHD remain unexamined. Though the existing research has created a strong foundation for understanding factors related to help-seeking and generating hypotheses, the crucial next step is to understand how these factors manifest in those who have yet to overcome barriers to help-seeking.

### **Specific Aims and Hypotheses**

**Aim 1.** Measure the association of attitudes, subjective norms, and perceived behavioral control with intention to seek help for pediatric ADHD among AIA and European American parents.

*Hypothesis 1:* In the total sample of parents, attitudes, subjective norms, and perceived behavioral control factors of the TPB will be associated with self-reported intention to seek help for their child’s ADHD symptoms. Consistent with previous TPB research, positive attitudes towards ADHD treatment, subjective norms leaning towards acceptability of professional treatment, and high perceived behavioral control will be positively and significantly associated with the intention to seek help (Armitage & Conner, 2000; Turner & Mohan, 2016; Wilcox et al., 2007).

**Aim 2.** Compare mean differences in the TPB model between AIA and European American parents.

**Hypothesis 2a:** AIA parents will perceive more negative attitudes toward seeking professional help for ADHD than European American parents. This is consistent with previous research demonstrating negative attitudes towards mental health treatment, and towards ADHD specifically in parents of Indian origin (Shah et al., 2019; Turner & Mohan, 2016).

**Hypothesis 2b:** AIA parents will have more negative subjective norms compared to European American parents. This is consistent with previous research showing negative attitudes and high levels of stigma in AIAs regarding mental health treatment (Kumar et al., 2020).

**Hypothesis 2c:** No differences will emerge in perceived behavioral control between European American and AIA parents. As AIA and European American parents are similarly affected by SES, the largest determinant of structural barriers, and ethnic differences in self-efficacy of help-seeking have not been found, no differences are expected in this variable.

**Aim 3.** Examine the moderating effect of ethnicity on the TPB model.

**Hypothesis 3a:** Ethnicity is expected to moderate the association between subjective norms and intention to seek help for ADHD such that negative subjective norms will have a greater impact on AIA parents' intentions to seek help for ADHD. This is consistent with previous research emphasizing the salient role of subjective norms in collectivistic cultures (Mak & Davis, 2014).

**Hypothesis 3b:** Ethnicity is not expected to moderate the association between attitudes or perceived behavioral control and the intention to seek help for ADHD.

## Methods

### Participants

Participants were recruited from Amazon's Mechanical Turk (MTurk) platform ( $n=34$ ), regional Facebook parent groups ( $n=9$ ), Reddit ( $n=97$ ), and snowball methods ( $n=66$ ). Nine participants were excluded for failing at least one attention check and two participants were excluded for reporting their child's age under five years old. The final sample included in analyses consisted of 195 parents. The response rate between recruitment methods could not be calculated as there was no method of tracking number of people who received the survey link. See Tables 1 & 2 for a description of sample demographics.

Eligible parent participants: (1) resided in the U.S., (2) were of either European or Asian-Indian ethnicity, (3) were the primary caregiver of a child aged 5-12 years old, (4) had a child at elevated risk for ADHD (operationalized below), and (5) had a treatment naïve proband child. Limiting the sample to U.S. residents allowed investigation of AIA populations who have been previously ignored in the literature and ensured that barriers to help-seeking did not vary as a function of country. Including parents of children aged 5-12 years old allowed comparison of ADHD symptoms to age/gender standardized norms (which begin at age 5) and also adhered to DSM-5 diagnostic criteria which stipulate onset of symptoms before age 12. High ADHD risk was operationalized as a parent report of current child symptoms of inattention or hyperactivity-impulsivity  $\geq 1$  standard deviation above the mean for age/gender norms. Children at low risk for ADHD were not the focus of the current project. Treatment-naïve status was operationalized as a child who has not been evaluated by and/or treated for inattention or hyperactivity/impulsivity by a healthcare professional.

## Procedure

The study was initially advertised on MTurk's HIT homepage and on Facebook parent groups through user posts as a study investigating child behavioral problems. Participants were not informed of the true aims (e.g., investigating help-seeking intentions in parents of children at-risk for ADHD) to avoid ascertainment bias from parents who were already concerned about ADHD. MTurk participants with a HIT acceptance ratio higher than 95% were able to respond to the ad and complete a pre-screening survey with inclusion and exclusion criteria. Facebook participants also completed the pre-screening survey to ensure eligibility. Participants who did not qualify terminated the study at the prescreening survey. MTurk participants received partial compensation in their accounts. Facebook participants did not receive compensation for completing the prescreening survey.

If parent participants met inclusion and exclusion criteria for the study, they provided informed consent in a Qualtrics survey before being directed to all study measures. Two validity checks (e.g., "The answer to the following question is blue") were embedded in the Qualtrics survey to assess for attentiveness. Data from participants who did not pass both validity checks ( $n = 9$ ) was excluded. Participants were debriefed to the true aims at the end of the study and compensated. Our procedures, also outlined in Figure 2, were in line with best research practices for MTurk as outlined by Chandler & Shapiro (2016), and in line with best practices for Facebook as outlined by Kosinski and colleagues (2015). At the end of the study survey, participants were asked to forward the study flyer to other potential participants.

Recruitment through Facebook encountered software "bots", or computer-generated algorithms designed to mimic human-like behavior (Bybee et al., 2021). These bots necessitated extensive data cleaning whereby 500+ responses with suspicious patterns and indicators of



untrustworthy data (e.g., extremely short response times, multiple surveys with identical answers) were removed. Additional strategies to prevent bots were implemented (e.g., only recruiting through private Facebook groups) and recruitment was increased to meet sample size requirements. The study was further advertised on Reddit and through parent newsletters. Participants recruited through these methods followed the same procedures and were compensated in the same manner as Facebook participants.

### ***MTurk***

Amazon's MTurk is an online platform designed to match research participants to a variety of research studies, known as "Human Intelligence Tasks" or "HITs". Each participant is assigned a unique identifier through the MTurk system, which allows them to be paid for their time and participation. Samples recruited through MTurk have been found to be more representative than college student samples and other online samples, and the US MTurk worker population primarily consists of European- and Asian-Americans (Chandler & Shapiro, 2016). Some studies have shown that MTurk workers are motivated and produce valid & reliable data (Behrend et al., 2011; Shapiro et al., 2013).

### ***Facebook***

Facebook is a social media platform that has been used by social scientists to gather data and is well suited for cross-cultural research due to the broad ethnoracial composition of users. Compared to traditional recruitment, Facebook recruitment tends to result in similarly representative samples with lower cost per participant and more rapid recruitment (Thornton et al., 2016). Additionally, Facebook is an effective means of recruiting minority populations (Carlini et al., 2015). Participants from the Facebook met inclusion criteria 1 – 5 identified above and had the same exclusion criterion as the MTurk sample.

### ***Reddit***

Reddit is a social media platform that allows researchers to target specific groups for study recruitment through the use of “subreddits” containing specific demographics and special interest groups. For example, the current study created user posts on used subreddits related to parenting and AIAs. The Reddit population is relatively representative of the general U.S. adult population when controlling for age, and recent studies show roughly equal gender distribution on the website (Shatz, 2017). On the other hand, gender distribution in specific subreddits may vary (Shatz, 2017).

### ***Parent Newsletter***

An electronic newsletter catering to the Indian-American community in Georgia, Alabama, Tennessee and South Carolina distributed the survey link to their readership (120,000+ parents) in a weekly email blast. The newsletter caters to new immigrants from India and second and third generation AIA’s. Although request for recruitment advertising were sent to newsletters across the country, this parent newsletter from the Southeast region was the only one that agreed to participate.

### **Measures**

All participants completed the Qualtrics survey in the standardized order presented in the order presented below. Questionnaires in the survey were not counterbalanced to avoid priming participants and creating bias. For example, asking participants about attitudes toward “ADHD” may have cued participants to label symptoms in the vignette as ADHD.

### ***Prescreening Survey***

Participants were asked to report their own country of residence, English proficiency, ethnicity, and number of children for whom they are the primary caregiver. English proficiency

was measured on a scale of 1 (not proficient) to 4 (native or native-like proficiency). Following these questions, participants were asked to select their one child aged between 5-12 years old who had the “most challenging behaviors,” while completing the screening measure, the Attention Deficit / Hyperactivity Disorder – Rating Scale – 5<sup>th</sup> edition (ADHD-RS-V; DuPaul, Power, et al., 2016).

The ADHD-RS-V is an 18-item questionnaire to assess children’s ADHD symptoms and is designed for completion by a parent or guardian. The questions assess the frequency of *DSM - 5* ADHD symptoms in a child over the past six months. The two-factor structure (inattention, hyperactivity-impulsivity) of the ADHD symptom items was confirmed by factor analyses and importantly, found to be invariant across child demographic factors (DuPaul, Power, et al., 2016). AIA parents included in the current study reported moderately higher ADHD symptoms in their children than European American parents ( $t(189) = -2.9, p < .01, d = .44$ ). Lastly, participants were asked to report on past contact with a health professional for evaluation for and/or treatment for their child’s inattention or hyperactivity/impulsivity.

Only those participants who qualified for the study advanced to the informed consent and the remainder of the study. For example, a parent who did not rate their child as  $\geq 1$  standard deviation above the respective age/gender mean for ADHD symptoms was thanked for their time yet not permitted to advance to the remainder of the study.

### ***Demographics***

Following informed consent, participating parents reported their age, gender, marital status, years residing in the U.S., parenting involvement, and socioeconomic status. Child age and gender were also reported for the child with the “most challenging behaviors”. Parenting

involvement was measured on scale from 1 (not involved in parenting) to 10 (the sole caregiver). Socioeconomic status was measured using total annual family income.

### ***Perceived ADHD Symptom Impact***

Perceived severity of the child's elevated ADHD symptoms was assessed by considering the functional impact of the ADHD symptoms. The Impairment Rating Scale is a visual analogue rating scale for considering the severity of functional impairments (Fabiano et al., 2006). The scale assesses parent perceptions of child impairment in 8 areas: peer, sibling, parent, and teacher relationships, academic, self-esteem, classroom/family, and global functioning. Scores on this measure ranged from 0 (no problem/definitely does not need treatment or special services) to 6 (extreme problem/definitely needs treatment or special services), with scores above 3 in any domain indicating need for treatment (Fabiano et al., 2006). The scale is reliable across informants ( $r=.78$ ), and demonstrates good concurrent, convergent, and discriminant validity (Fabiano et al., 2006). The sum score of all 8 impairment domains was used in this study as a sample descriptor (Bussing, Gary, et al., 2003). Parents in the current sample indicated elevated levels of global functional impairment ( $M = 3.24$ ;  $SD = 1.31$ ) in their child with no significant differences between ethnic groups.

### ***Knowledge of ADHD***

**Recognition of ADHD.** Vignettes for ADHD with a precedence in child stigma literature (O'Driscoll et al., 2012) were adapted to reflect a child who matches the age and gender of the participating parent's child (gleaned from the prescreening survey) and described typical ADHD-related behaviors in home and school contexts. Age in the vignette was matched to the participating parent's child by indicating that both children are school classmates. To assess participants' ability to accurately label ADHD, participants responded to the open-ended question "What do you think is going on with [NAME]?". Answers were coded by the authors as

0=not ADHD or 1=ADHD, ADD, hyperkinesis ( $kappa=1.0$ ). This dichotomous measure was used as a covariate in this study to control for the positive influence of knowledge of ADHD symptoms on attitudes towards seeking treatment.

**Knowledge of ADHD Etiology.** The Beliefs About Causes-Parent (BAC-P) Scale is a 44-item measure that assesses parents' explanatory etiologies for childhood ADHD through two domains: biopsychosocial beliefs and sociological, spiritual, and nature disharmony beliefs (Yeh et al., 2005). The domain of biopsychosocial beliefs includes questions regarding physical causes, personality, relational issues, familial issues, and trauma as causal etiologies (Yeh et al., 2005). The domain of sociological, spiritual, and nature disharmony beliefs includes friends, American culture, prejudice, economic problems, spiritual causes, and nature disharmony as causal etiologies (Yeh et al., 2005). The original scale elicits yes/no answers to a stem question of whether "any emotional or behavioral problem that your child has are due, at least in part," to issues covered in each domain. The measure has good test-retest reliability and construct validity (Yeh et al., 2005).

The measure was adapted to have a stem question specific to ADHD ("any inattention and/or hyperactivity-impulsivity your child has are due, at least in part"), and answer choices were expanded from a dichotomous scale (yes/no) to a 5-point Likert scale where 1 is "strongly disagree" and 5 is "strongly agree". The expansion of response formats from dichotomous to Likert-type rating scales increases reliability and validity of the scale (Clark & Watson, 2019). Internal reliability for this scale in the current study was excellent ( $\alpha=0.98$ ). The sociological, spiritual, and nature disharmony domain was reversed scored. Thus, higher total scores of the sociological, spiritual, and nature disharmony items indicated more agreement with biopsychosocial etiology of ADHD symptoms, with the highest possible total score being 215.

The total score was used in this study as a continuous covariate to control for the influence of knowledge of ADHD etiology on attitudes towards seeking treatment.

### ***TPB Constructs***

**Inventory of Attitudes Toward Seeking Mental Health Services.** This 24-item measure (Mackenzie et al., 2004) is designed to assess TPB attitudes, subjective norms and perceived behavioral control components. The scale measures three domains: *Psychological Openness* (e.g., “People should work out their own problems; getting professional help should be a last resort”; consistent with the Attitudes construct), *Indifference to Stigma* (e.g., “Having been mentally ill carries with it a burden of shame”; consistent with the Subjective Norms construct) and *Help-Seeking Propensity* (e.g., “It would be relatively easy for me to find the time to see a professional for psychological problems”; consistent with the perceived behavioral control construct). The current study adapted the original, more general measure items to focus specifically on parents’ beliefs about their children’s ADHD symptoms (e.g., “If my child had ADHD, we would work it out ourselves; getting professional help should be a last resort”).

The items in the Inventory of Attitudes Toward Seeking Mental Health Services were measured on a 5-point Likert scale from 0 (disagree) to 4 (agree), with higher scores indicating more positive attitudes, subjective norms, and higher perceived behavioral control in intention to seek help. For each subscale, the original measure had good internal consistency ( $\alpha=0.76-0.82$ ), test-retest reliability ( $r= 0.64-0.91$ ), and convergent/divergent validity (Mackenzie et al., 2004). Internal reliability in the current study was good ( $\alpha=0.89$ ). Scores from each subscale were used as measures of TPB components in this study.

### ***Intention***

Intention was measured with a three item questionnaire that has precedence in the TPB literature (Mo & Mak, 2009). This measure was adapted for the present study to specifically ask

parents about seeking help for their child's ADHD symptoms (e.g., "I intend to seek professional help for my child's inattention and/or hyperactivity/impulsivity") and extend response choices from a 5-point scale to a 11-point scale. The scale ranged from 0 (strongly disagree) to 10 (strongly agree) with higher scores indicating greater intention to seek help. The expansion of response formats to longer Likert-type rating scales increases reliability and validity of the scale (Clark & Watson, 2019). The internal reliability of the adapted scale was excellent ( $\alpha=0.95$ ). The total score of this measure was used as the only dependent variable in this study.

### **Planned Analyses**

**Hypothesis 1:** A hierarchical linear regression analysis was conducted to evaluate the prediction of intention (Y) from attitudes ( $X_1$ ), subjective norms ( $X_2$ ), and perceived behavioral control ( $X_3$ ). The first step of the analysis included data collection site, recognition of ADHD, and knowledge of ADHD etiology as covariates. The second step included attitudes, subjective norms, and perceived behavioral control. Continuous variables were grand mean centered at the second step.

**Hypotheses 2a, b, c:** A series of hierarchical linear regressions was used to test for mean differences between ethnic groups on TPB factors. The first step of the regression included data collection site, recognition of ADHD, and knowledge of ADHD etiology as covariates. The second step included ethnicity. This regression analysis was repeated three times with each TPB factor (attitudes, subjective norms, and perceived behavioral control) as the dependent variable.

**Hypotheses 3a, b, c:** A hierarchical linear regression analysis was conducted to test the moderating role of ethnicity in the TPB. The first step of the analysis included data collection site, recognition of ADHD, and knowledge of ADHD etiology as covariates. The second step included ethnicity, attitudes, subjective norms, and perceived behavioral control. Continuous

variables were grand mean centered at the second step. The interaction terms between ethnicity and the TPB variables was entered all at once into the third step of the hierarchical regression analysis. The interaction effect was expected to be significant for subjective norms, yet not attitudes or perceived behavioral control, thus demonstrating the moderating effect of ethnicity on subjective norms.

### **Preliminary Analyses**

Analyses were conducted in SPSS-26. Power analyses were conducted in G\*Power 3.1.

**Power Analyses.** *A priori* power estimates using effect sizes from previous research examining predictive factors of help-seeking were calculated using G\*Power. Previous ADHD studies demonstrate small to medium effect sizes between attitudes and help-seeking behaviors (Chang et al., 2020; Krain et al., 2005; Sciutto, 2015), medium effect sizes between subjective norms and help-seeking behavior (Boudreau & Mah, 2020; Mo & Mak, 2009), and medium effect sizes between perceived behavioral control and help seeking intentions (Bussing, Zima, et al., 2003; Mak & Davis, 2014; Mo & Mak, 2009). Using a regression,  $R^2$  increase, and assuming 80% power to detect significant associations, an alpha level of .05, a medium effect size ( $f^2=.15$ ), and 6 predictors, a sample size of 98 was needed to attain adequate statistical power. Thus, the analyses are adequately powered with 195 participants.

## **Results**

**Data Inspection.** Before conducting analyses, as suggested by Tabachnick and Fidel (2007), outlier data points above/below 3SD from the mean of each measure were removed. This removed the ability of outlier to unduly influence statistical significance through Type I or Type II errors. A total of four cases were removed resulting in a final sample of 191 participants. Analyses including outliers demonstrated comparable results.



Data were also analyzed for missingness. Little's MCAR test ( $\chi^2(1116, N = 195) = 1174.77, p = .11$ ) did not demonstrate strong evidence for a deviation from the MCAR assumption, and less than 2% of the total data were missing. Therefore, cases were deleted listwise (Meeyai, 2016).

**Multicollinearity and normality assessment.** Multicollinearity may increase the variance of the regression coefficients and result in a lack of statistical significance when the individual predictor is, in fact, significant (Type II Error), thus leading to inaccurate conclusions. During hypothesis testing, multicollinearity diagnostics were conducted for each regression analysis using variance inflation factor (VIF). The VIF is an index of how much variance of a regression coefficient is increased due to multicollinearity and is a widely used method of detecting multicollinearity (Daoud, 2017). As suggested by previous research (Daoud, 2017), independent variables that have a VIF greater than 5 should be further investigated. Only VIF values (reported in Tables 6-8) in hypothesis 3 showed VIF greater than 5, which can be attributed to correlations between interaction terms and independent variables (Francoeur, 2013). Skewness and kurtosis analysis of all dependent and independent variables met the assumptions of normality (Mishra et al., 2019).

**Preliminary analysis of data collection sites.** One way Welch's ANOVAs were conducted to assess for recruitment site differences. Results indicated significant differences between recruitment sites on independent variables of Attitudes,  $F(3, 187) = 4.515, p < .01; \eta^2 = .068$ , and Perceived Behavioral Control,  $F(3, 187) = 12.227, p < .001; \eta^2 = .164$ , yet not on Subjective Norms,  $F(3, 187) = 1.80, p = .15; \eta^2 = .028$ . Therefore, recruitment sites were added as covariates in the first step of all regression analyses to control for differences. Recruitment sites could not be analyzed separately as the Facebook group only contained 5 European American

parents, thus creating invalid cells when comparing key study variables. Therefore, participants were grouped into two recruitment methods: “Snowball Sample” (recruitment through third party advertising via email or parent newsletters;  $N = 66$ ) and “Direct” (recruitment through direct advertising on Facebook, MTurk, and Reddit;  $N = 140$ ). A portion of parents in the snowball sampling group contacted the researchers to receive access to the survey. Evidence for site differences within categories did not emerge.

**Preliminary analysis of IASMHS construct validity.** A principal components analysis (PCA) with direct oblimin rotation was used to determine if latent components of the Inventory of Attitudes towards Seeking Mental Health Services (IASMHS) in this sample were consistent with the original scale. The PCA was restricted to three factors with a criterion of 0.4 for factor loadings. There was some overlap in factor loadings of items in the IASMHS (Table 3). Factor 1 (Attitudes) in the original scale included 8 items, of which 6 were retained in the PCA Factor 1. Seven items from Factor 3 (Subjective Norms) of the original scale, were added to Factor 1 in this PCA. Factor 2 (Perceived Behavioral Control) remained largely identical, where all eight original items retained in this PCA, and one item from Factor 3 was added. Factor 3 (Subjective Norms) saw the most change with none of the original items retained, and two items from Factor 1 now loading onto Factor 3 in the PCA. Examination of the factor structure by ethnicity yielded similar results; Factors 1 & 3 of the original scale merged ( $r=0.85$ ). As the IASMHS is a well-respected instrument (Wei et al., 2017), the original factor structure was used to calculate subscale scores for this study.

**Preliminary analysis of demographic comparisons.** T-Tests were conducted to test for differences in the dependent variable based on parent and child gender. No significant differences emerged (all  $ps > 0.3$ ); thus, parent and child gender were not included in any further

analyses. Pearson's bivariate correlations did not indicate any significant associations ( $p > 0.8$ ) between proband child age and parental help seeking intentions, therefore child age was not included in any further analyses. See Tables 1 & 2 for all sample demographics.

### **Study Covariates**

Recruitment method, knowledge of ADHD, and recognition of ADHD were utilized as covariates in the hierarchical regression analyses. Recruitment method was correlated with attitudes such that parents who directly recruited from Facebook, MTurk, and Reddit were more likely to hold positive attitudes (Table 4).

Knowledge of ADHD etiology was significantly associated with ethnicity ( $F(1,189) = 8.89, p = .003 ; \eta^2 = .045$ ) such that European American parents endorsed greater biopsychosocial beliefs of ADHD etiology. Among European Americans, stronger biopsychosocial beliefs were significantly and negatively correlated with attitudes, subjective norms, recognition of ADHD and recruitment method (i.e., snowball sample had stronger biopsychosocial beliefs) (Table 4). There were no differences between mothers and fathers in knowledge of ADHD etiology.

Recognition of ADHD was significantly associated with ethnicity and parent gender; European Americans and mothers were most likely to accurately recognize symptoms of ADHD in children, compared to Asian Indian American parents or fathers ( $\chi^2(2, 185) = 8.84, p = .003$ , Cramer's  $V = .33$ ). Among European American parents, recognition of ADHD was positively correlated with attitudes and subjective norms and negatively correlated with perceived behavioral control. Although not included as a covariate, parent gender was significantly associated with attitudes such that fathers across both ethnic groups held more positive attitudes towards help seeking than mothers ( $F(2,188) = 6.23, p = .002$ ).

### **Hypothesis 1**

The first block of the hierarchical regression examined the prediction of intention to seek help from covariates of data collection method, recognition of ADHD, and knowledge of ADHD etiology. Results for the first block of the model, containing only covariates, were not significant ( $r^2 = .03$ ,  $F(3,181) = 1.98$ ,  $p = .12$ ). The second block of the model revealed that the TPB variables of attitudes, subjective norms, and perceived behavioral control account for an additional and significant 7% of variance in intention to seek treatment ( $r^2$  change = .07,  $F$ change(3,178) = 4.73,  $p = .003$ ). Perceived behavioral control was the only significant predictor of help seeking intention ( $\beta = .25$ ,  $t(178) = 3.34$ ,  $p = .001$ ) such that a greater sense of control over obstacles to help seeking increased the intention to seek help for all parents. Attitudes and subjective norms did not significantly predict help seeking intention among the total sample of parents. Results of all hypotheses are presented in Tables 6-8.

### **Hypothesis 2a**

The hierarchical regression model examined prediction of attitudes from ethnicity, controlling for covariates of data collection method, recognition of ADHD, and knowledge of ADHD etiology. The first step of model, containing only covariates, was significant ( $r^2 = .21$ ,  $F(3,181) = 16.11$ ,  $p = .00$ ) with all predictors significantly contributing to the model. The second step of the model added ethnicity and was also significant ( $r^2 = .21$ ,  $F(4,180) = 12.20$ ,  $p = .00$ ); however, ethnicity did not contribute significantly to the model ( $\beta = -.06$ ,  $t(180) = -.76$ ,  $p = .45$ ).

### **Hypothesis 2b**

A model similar to hypothesis 2a was tested, examining prediction of subjective norms from ethnicity, controlling for covariates of data collection method, recognition of ADHD, and

knowledge of ADHD etiology. The first step of model, containing only covariates, was significant ( $r^2 = .15$ ,  $F(3,181) = 10.61$ ,  $p = .00$ ) with recruitment method and knowledge of ADHD significantly contributing to the model. The second step of the model added ethnicity and was also significant ( $r^2 = .15$ ,  $F(4,180) = 8.20$ ,  $p = .00$ ); however, ethnicity did not contribute significantly to the model ( $\beta = -.08$ ,  $t(180) = -.10$ ,  $p = .32$ ).

### **Hypothesis 2c**

The hierarchical regression model examined prediction of perceived behavioral control from ethnicity, controlling for covariates of data collection method, recognition of ADHD, and knowledge of ADHD etiology. The first step of model, containing only covariates, was significant ( $r^2 = .12$ ,  $F(3,181) = 8.39$ ,  $p = .00$ ) with recruitment method and knowledge of ADHD significantly contributing to the model. The second step of the model added ethnicity and was also significant ( $r^2 = .14$ ,  $F(4,180) = 7.10$ ,  $p = .00$ ). As with hypotheses 2a & 2b, ethnicity did not contribute significantly to the model ( $\beta = -.13$ ,  $t(180) = -1.72$ ,  $p = .09$ ).

### **Hypothesis 3**

The first block of the regression examined the prediction of intention to seek help from covariates and was not significant ( $r^2 = .03$ ,  $p = .19$ ; see Hypothesis 1). The second block of the regression added ethnicity, attitudes, subjective norms, and perceived behavioral control, yielding a significant model ( $r^2 = .11$ ,  $F(7,177) = 3.01$ ,  $p = .005$ ). As in Hypothesis 1, perceived behavioral control emerged as the only significant predictor of help seeking intention ( $\beta = .29$ ,  $t(177) = 3.22$ ,  $p = .002$ ). The final step of the significant regression model added interaction terms between ethnicity and the TPB variables ( $r^2 = .27$ ,  $F(10,174) = 6.38$ ,  $p < .001$ ). Among the interaction terms, only interaction between perceived behavioral control and ethnicity

significantly contributed to the model ( $\beta = -.58, t(174) = -4.52, p < .001$ ). The interaction between subjective norms and ethnicity was not significant ( $\beta = -.39, t(174) = -1.84, p = .07$ ). Thus, the effect of perceived behavioral control on intention to seek help significantly differs between AIA and European American parents; European American parents' help seeking intentions were more impacted by their perceived behavioral control than AIA parents (see Figure 3).

Post-hoc simple slopes analysis demonstrated a positive and significant relationship ( $\beta = .60, t(187) = 6.66, p < .001$ ) between perceived behavioral control and intention to seek help among European Americans. Conversely, a negative relationship ( $\beta = -.13, t(187) = -1.29, p = .199$ ) between the two variables emerged among AIA parents.

## **Discussion**

The primary goal of this study was to understand the influence of ethnicity on parents help-seeking intentions for their child's elevated ADHD symptoms in a treatment-naïve sample. These findings build on existing research that examines help-seeking behaviors for ADHD in some ethnoracial minority populations (e.g., African American and Latinx) through assessment of general (not specific to their child) ethnoracial minority population attitudes or retrospective accounts of parents who have already sought help. Overall, parents included in this sample had not sought treatment for their child's ADHD symptoms and associated impairments, despite the high risk for ADHD conferred by their symptom and impairment reports (DuPaul et al., 2016).

### **Perceived Behavioral Control**

Perceived behavioral control, or the perceived ability to overcome barriers to treatment, emerged as a prominent influencer of help-seeking intentions among the total sample of parents (Hypothesis 1). The effect of perceived behavioral control on help-seeking intentions also

differed between ethnic groups such that European American parents' help seeking intentions were more impacted by their perceived control over possible barriers (Hypothesis 3). European American parents reported significantly higher perceived behavioral control than AIA parents that was positively and significantly correlated with intention to seek help (Tables 4 & 5), which predicted more strongly to intention to seek help. However, this mean difference between ethnicities disappeared when accounting for covariates of knowledge of ADHD etiology and recruitment method (Hypothesis 2c).

The largest determinant of structural barriers, socioeconomic status (SES), was relatively similar in both groups and represented an average annual income exceeding \$100,000. Therefore, differential effects of perceived behavioral control on help-seeking intentions may be better explained by knowledge of ADHD treatment and self-efficacy. Ethnoracial minorities in the United States have reported being unsure of treatment options more often than European American parents (Bussing, Gary, et al., 2003) and research from India reveals that parents often consult informal avenues of care (e.g., religious leaders, social supports) before approaching mental health professionals (Arya et al., 2015). Taken together, it is possible that AIA parents have less knowledge about where and how to access treatment for ADHD despite having financial resources and intent to do so (i.e., high help seeking intentions), resulting in lower confidence or self-efficacy to execute treatment seeking behaviors (i.e., low perceived behavioral control). AIA parents with high perceived behavioral control may also have higher self-efficacy that allows greater confidence in managing their child's ADHD symptoms without intending to seek professional care. Future research is necessary to investigate these hypotheses and parse out the nuances of perceived behavioral control among AIAs. Nonetheless, this group difference

variable has implications for increasing perceived behavioral control and better engaging parents in ADHD treatment seeking behaviors.

### **Subjective Norms and Attitudes**

Hypotheses relating to subjective norms, beliefs about whether important individuals in one's life would endorse help-seeking for ADHD, and attitudes, overall evaluations of seeking help for ADHD, were not supported. Subjective norms and attitudes did not differ between ethnicities and did not predict parental intention to seek help for ADHD after controlling for covariates. One way to account for these nonsignificant findings is through examination of the IASMHS factor structure (Table 3). The principal components analysis of the IASMHS demonstrates that this sample of parents responded to "Attitudes" and "Subjective Norms" items in a similar manner, thus merging the majority of items in both subscales under a single component. Parents in this sample viewed attitudes and subjective norms as overlapping concepts, as evident in the strong positive correlations between attitudes and subjective norms for both ethnic groups (Table 5).

Among European Americans, attitudes towards seeking help were negatively associated with knowledge of ADHD etiology and positively associated with recognition of ADHD. These associations were in the same direction for AIA parents but failed to reach significance. Knowledge of ADHD was positively associated with recognition of the disorder among AIAs, but negatively associated with recognition in European Americans. Thus, AIA parents who can recognize ADHD are also aware of its biopsychosocial etiology and are more likely to hold positive views of treatment. On the other hand, European American parents who endorse biopsychosocial etiology may not recognize ADHD and may have more negative views of ADHD treatment. This is inconsistent with previous literature that has not found significant



differences in how parents of different ethnicities view causes of ADHD (Pham et al., 2010) and notes hesitancy among various groups of parents regarding medication intervention for children (Bussing, Zima, et al., 2003; Kuppili et al., 2017). In this sample, the extremely low levels of recognition of ADHD may contribute to the present findings which differ from the extant literature.

### **Theoretical Implications**

Among AIA parents, the TPB may not predict intention to seek help as seen in the significant negative correlations of perceived behavioral control, subjective norms, and attitudes, with intention to seek help (Table 4). This is consistent with some previous studies that have found that public stigma is not associated with AIA mental health help seeking (Nair et al., 2007; Turner & Mohan, 2016). Likewise, a study examining African American and Hispanic American parents help-seeking intentions for ADHD similarly concluded that “help-seeking attitudes may not be a useful predictor within ethnic minority groups” (Turner et al., 2015).

Researchers have suggested that the construct of “attitudes” is quite broad (Banaji & Heiphetz, 2015) and subsequently proposed integrating the TPB with the Health Behavior Model (Hartley et al., 2018; Rosenstock, 1966) to create a more parsimonious model with well-defined constructs. Rosenstock’s (1966) Health Belief Model (HBM) has been used to examine mental health help-seeking (Henshaw & Freedman-Doan, 2009; Kim & Zane, 2016) and cultural differences in help-seeking (Davis, Buchanan, & Green, 2013). The theory posits that people engage in health-related behaviors when they (a) perceive that they may be vulnerable to the problem (perceived susceptibility), (b) believe that the problem has serious consequences or will impair daily functioning (perceived severity), (c) believe that the intervention will be effective at reducing symptoms (perceived benefits), and (d) perceive few barriers to engage in the behavior

(perceived barriers). Cues to action and self-efficacy were added to the HBM later. Cues to action are potential external determinants of behavior (e.g., family influence), and self-efficacy is the individual's belief that they are capable of participating in the health behavior. In an integrated model, the four main constructs of the HBM (i.e., perceived susceptibility, severity, benefit, and barriers) are used to further operationalize the construct of "attitudes" in the TPB. The three variables of the TPB (e.g., attitudes, subjective norm, and perceived behavior control), along with cues to action, directly predict intention to seek help for symptoms of ADHD (Hartley et al., 2018). Future research in AIAs may consider implementing this integrated theoretical model and determine its applicability to the population.

### **Clinical Implications**

Given the robust association found between perceived behavioral control and help-seeking intentions, fostering self-efficacy may be important to increase EA parents' ability to overcome barriers to help-seeking (Moore et al., 2015; Taylor & Antshel, 2021). Parents' negative appraisals of their ability to successfully access treatment and improve their child's functioning may undermine ADHD treatment seeking in EA parents. Primary care physicians and pediatricians may consider engaging in brief motivation enhancement for parents whose children are at risk for ADHD. Motivational interviewing was specifically developed to address resistance to changing health behaviors (e.g., seeking help for child's ADHD symptoms) (Miller & Rollnick, 2013) and has empirical support for increasing treatment initiation among parents (Dawson et al., 2014) by emphasizing parents' autonomy and expertise with reference to their child and their family's lifestyle. Furthermore, primary care physicians may pay particular attention to fathers' attitudes towards help-seeking during motivational interviewing (Allport et al., 2018).

On the other hand, AIA parents may benefit from increased knowledge of ADHD symptoms, and treatment options. Given the (a) low levels of ADHD knowledge in current and previous studies among AIAs (Anand et al., 2018; Kumar & Reid, 2020), and (b) the influence of accurate knowledge on parental treatment decisions (Sciutto, 2015), clinicians may provide brief education regarding ADHD etiology, symptoms, and treatment to parents at regular checkups. Many Indian parents are resistant to adopting an illness model of ADHD (Wilcox et al., 2007), but are more willing to adopt a biopsychosocial model after receiving psychoeducation from pediatricians and psychiatrists and are less likely to blame their child and themselves after being introduced to biopsychosocial explanations of ADHD (Shah et al., 2019). Psychoeducation could also include information on *who* parents could approach for concerns related to ADHD as previous studies have revealed that Indian parents prefer informal sources of care before approaching professionals (Arya et al., 2015), leading to longer delays in treatment initiation.

### **Limitations and Future Directions**

There are several limitations to the current study that support the need for further investigation of this topic. First, this sample was highly educated, wealthy, married parents. Although SES is a complex measure and may require more nuance (e.g., number of people in the household), this high-income sample is representative of AIA and European American median household income in the United States (Fry et al., 2021). Nevertheless, replication in a more diverse sample will increase generalizability. For example, low-income families may demonstrate lower perceived behavioral control due to greater structural barriers (e.g., inadequate insurance, limited time) (Bussing, Zima, et al., 2003; Corkum et al., 2015).

Further examination of the recognition of ADHD in the AIA population should be considered. This total sample had surprisingly low rates of ADHD recognition compared to

previous literature which cites rates of problem recognition from 16% among Korean parents to 70% in European American parents (Park et al., 2018; Taylor & Antshel, 2019). It is especially concerning that less than 1% of AIA parents in the current sample were able to identify ADHD. The vignettes used to measure ADHD recognition are limited by their dichotomous coding scheme. Coding that differentiates between responses that approximated ADHD (e.g., "the child is inattentive") from those that attributed described behavior to a non-ADHD phenomena (e.g., "lax parenting") could provide greater understanding of ADHD recognition in the AIA population. Nevertheless, problem recognition is among the key components to alleviating impairment and preventing negative long-term outcomes for children with ADHD (McLeod et al., 2007). Parents may be better at recognizing problematic symptoms in a dimensional manner, rather than identifying ADHD as a categorical diagnosis (Park et al., 2018). Therefore, future research should examine the ability to recognize problem symptoms dimensionally and ADHD diagnoses categorically among AIA parents, and their subsequent ability to predict help-seeking intentions. Future research may also consider examining problem recognition among AIA parents for other pediatric mental health disorders (e.g., autism, depression) to determine whether ADHD is uniquely difficult to recognize.

Although there was evidence for significant associations between hypothesized factors and intention to seek help, there was still substantial variance unaccounted for in the models. While previous research has shown the TPB model to account for 40% of variance (Armitage & Conner, 2000), the model in this study only accounted for 7% of the variance. This suggests that previous findings regarding knowledge of ADHD and acceptability of treatment conducted in European American samples are not easily generalizable to the AIA population. This indicates a need to develop measurement tools with greater sensitivity to additional factors that affect help

seeking attitudes of AIA parents. Of note, biopsychosocial beliefs were not linked to recognition of ADHD among AIA parents in this sample. Given that both variables are positively associated with help-seeking intentions in previous studies examining ethnoracial majority and minority populations, (Bussing, Gary, et al., 2003; McLeod et al., 2007), it is important to explore additional, more AIA culturally specific factors that might contribute to treatment seeking attitudes and intentions to seek treatment.

The factor structure of the Inventory of Attitudes toward Seeking Help for Mental Health Services (IASMHS) in this study did not match the factor structure of the original validated scale. In particular, the factor structure in the current study merged the Attitudes and Subjective Norms subscales into a single factor. This may be partly explained by the conceptual overlap between the subscales; a primary component of Subjective Norms is stigma, which impacts individuals' global beliefs about ADHD treatment (i.e., attitudes) (Vogel et al., 2007). Alternatively, adaptation of the IASMHS items to focus specifically on ADHD (never been done before), asking about treatment seeking for someone other than the individual themselves, and querying a treatment-naïve sample may have lowered reliability of the scale. Validating the IASMHS in parents, following procedures similar to the validation methods described by Mackenzie, Knox, Gekoski, & Macaulay (Mackenzie et al., 2004) with confirmatory and exploratory factor analyses, may shed light on possibly different factors of parental ADHD treatment seeking for their child.

Although this study was able to enroll a sample that primarily consisted of fathers, who have been historically very difficult to recruit in ADHD help-seeking research (Bögels & Phares, 2008; Singh, 2003), several other parental factors that may affect help-seeking intentions were not considered. For example, mental health service utilization for themselves, parents' current

mental health symptoms, and parent stress levels were not examined, despite evidence suggesting help-seeking intentions impact (Thurston & Phares, 2008). However, it is notable that the total sample of parent respondents in this sample were slightly more involved in parenting than their partner. Future research is needed to specifically examine which – if any – of these parental factors influences help-seeking intentions.

AIA parents in this sample indicated higher levels of ADHD symptoms (98<sup>th</sup> – 99<sup>th</sup> percentile; see Table 2) than European American parents, but perceived lower impairment in their children. Thus, AIA parents may not consider ADHD symptoms to be as problematic and may be more tolerant of symptoms. Research demonstrates a positive relationship between impairment level and help-seeking (Bussing, Zima, et al., 2003); AIA parents in this study also had lower intentions to seek help. Future research should explore these interesting findings.

Lastly, future research should continue to examine the AIA population in the context of ADHD and help-seeking. Disparities in ADHD diagnosis and treatment rates among ethnic minorities have been (Zito et al., 1998) and continue to be (Slobodin & Masalha, 2020) an area of specific concern (Slobodin & Masalha, 2020; Zito et al., 1998). The Asian Indian population is one of the fastest growing ethnic minorities in the United States, with a population that has doubled from 2000 to 2015 (Lopez et al., 2017). This is the first study to consider ADHD help-seeking behavior in AIA parents yet is hopefully not the last. It is critical that research keep up with the needs of the Indian diaspora to inform education and health programs for AIAs.

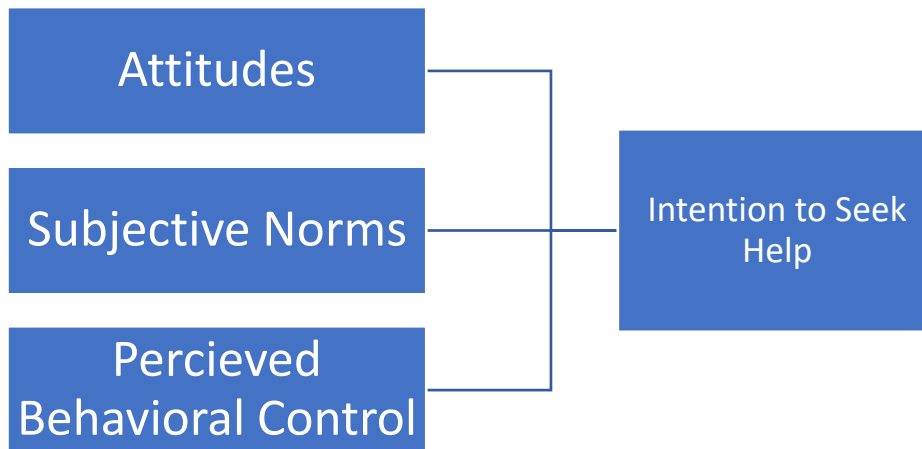
## **Conclusions**

Childhood ADHD is a common and impairing neurodevelopmental disorder with long-term negative outcomes in a variety of domains (Biederman & Faraone, 2005; Kessler et al., 2006; Spencer et al., 2007). Despite the safe and effective treatments for ADHD (Faraone et al.,

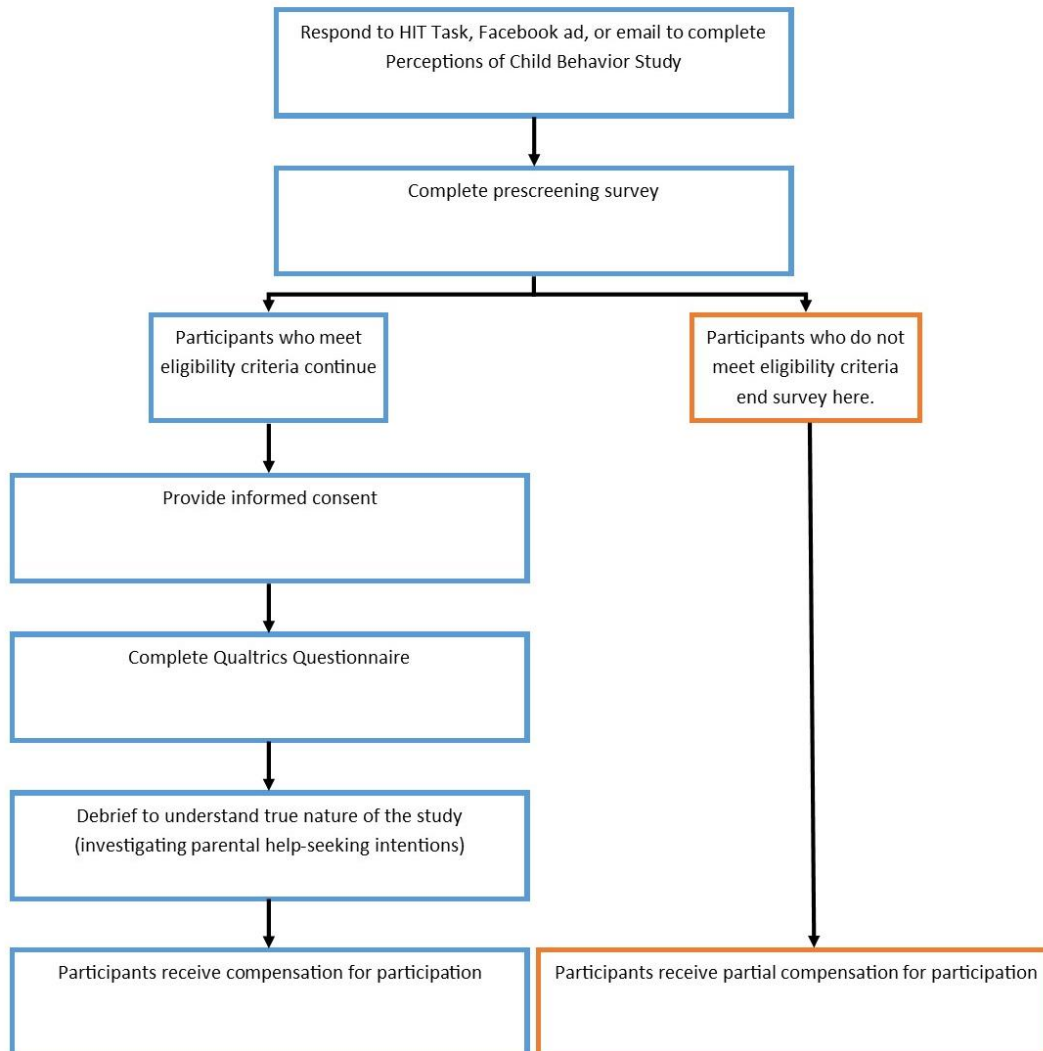
2003), ethnoracial minorities are less likely to seek help for ADHD due to less worrisome perceptions of ADHD symptoms, unfamiliarity with the etiology and treatment of ADHD, more experiences of stigma, and less acceptability of seeking help for mental disorders (Coker et al., 2016). Previous research on ethnoracial populations in the United States has primarily focused on African American and Latinx populations (Slobodin & Masalha, 2020); AIAs have remained completely unexplored in the ADHD help-seeking literature.

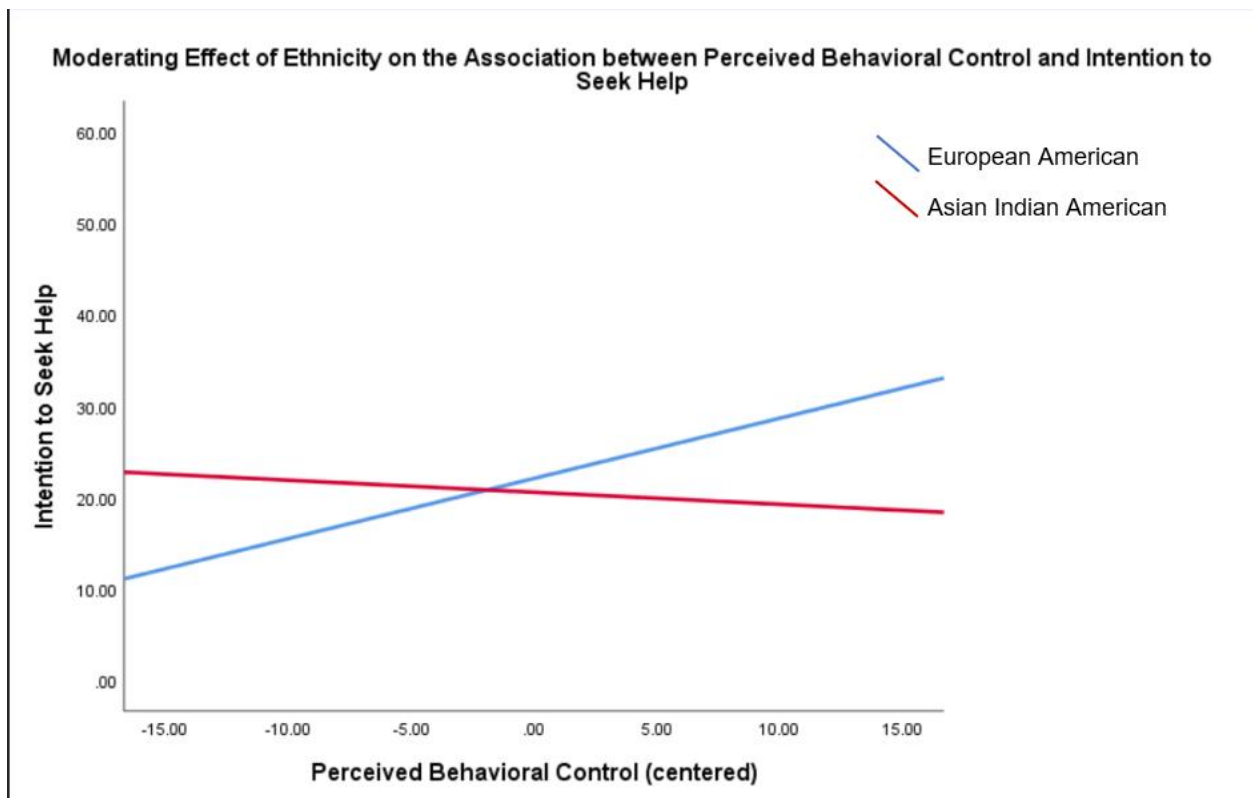
Consistent with previous research (Armitage & Conner, 2000; Sciutto, 2015; Turner & Mohan, 2016), the current study found that AIA parents were unfamiliar with ADHD diagnoses and European American parents were more likely to seek help if they held positive attitudes and had knowledge of ADHD. A novel finding in this study was that European American parents' help seeking intentions were more impacted by their perceived behavioral control over possible obstacles.

Additional research exploring nuances of perceived behavioral control among ethnoracial populations as well as continued attention to development of efforts to increase treatment engagement is warranted. Future research should continue to explore how poor understanding of ADHD and endorsement of biopsychosocial etiology might interact to impact ADHD help-seeking intentions for treatment. As the current study highlighted, investigation of barriers is especially important to consider in a non-treatment-seeking sample, given the prevalence of ADHD symptoms and impairment demonstrated in children whose parents who are not currently accessing evidence-based treatment.

**Figures****Figure 1***Theory of Planned Behavior*



**Figure 2***Study Procedure Flow Chart*

**Figure 3*****Moderating Effect of Ethnicity***

## Tables

**Table 1**  
*Parent Demographic Variables*

Variable	Asian Indian (N=102)		European American (N=89)		t (Cohen's D)	$\chi^2$ (Cramer's V)	Total Sample (N=191)	
	M (SD)	%	M (SD)	%			M (SD)	%
Age	39.85 (4.76)		39.48 (5.88)		-.48 (.07)		39.68 (5.30)	
Gender (Male)		62.70		65.20		0.94 (.07)	63.9 Male	
Education						6.95 (.19)		
Less than high school		0.98		0				0.5
High school graduate		4.90		1.12				3.1
Some college		11.76		9.00				10.5
2-year degree		10.78		4.49				7.9
4-year degree		62.75		75.28				68.6
Professional degree		8.82		10.11				9.4
English Proficiency	3.03 (.17)		3.43 (.50)		7.18 (1.07) ***		3.21 (.41)	
Years lived in U.S.	33.82 (8.58)		38.09 (6.26)		3.96 (.57) ***		35.81 (7.86)	
Recruitment						18.52 (.31)***		
Direct Sampling		46.1		16.9				32.50
Snowball Sampling		53.9		83.1				67.5
Employment						1.99 (.10)		
Full Time		77.45		85.39				81.2
Part Time		19.61		12.36				16.2
Unemployed		2.94		2.24				2.6
Annual Income	142,579 (53,337)		150,750 (76,583)		.844 (.12)		146,386 (65,157)	
Marital Status						1.81 (.10)		
Married		92.2		92.10				92.1
Widowed		1.96		1.12				1.6
Divorced		1.96		3.37				2.6
Separated		2.94		1.12				2.1
Never Married		0.98		2.24				1.6

Parenting Involvement	6.78 (1.37)	6.84 (1.93)	.238 (0.04)	6.81 (1.65)
Number of Children	2.51 (.98)	2.21 (.80)	-2.29 (.33)*	2.37 (.91)
Non-ADHD history of help-seeking <sup>a</sup>	14.6	2	10.77 (.24)**	7.9
Recognize ADHD	0.98	12	10.02 (.23)**	5.9
BAC-P Total	132.24 (8.20)	135.76 (8.11)	2.98 (0.43)**	133.88 (8.33)

*Note.* \* $p \leq .05$  \*\* $p \leq .01$  \*\*\* $p \leq .001$ ; <sup>a</sup> for child's mental health problems; ADHD: Attention Deficit/Hyperactivity Disorder; BAC-P: Beliefs About Causes-Parent Scale

**Table 2**  
*Child Demographic Variables*

Variable	Asian Indian (N= 102)		European American (N= 89)		t (Cohen's D)	$\chi^2$ (Cramer's V)	Total Sample (N=191)	
	M (SD)	%	M (SD)	%			M (SD)	%
Child Age	7.88 (1.73)		7.83 (1.72)		-.20 (.03)		7.86 (1.72)	
Child Gender (Male)		63.7		52.8		2.34 (.11)		58.6
Current Comorbidities								
Anxiety		0		9.87		9.57 (.22)**		4.2
Depression		0.99		8.53		5.61 (.17)*		4.2
OCD		0		2.30		2.32 (.11)		1
ADHD-RS-5								
Total	99.08 (0.84)		98.00 (2.25)		-2.28 (.42)**		98.39 (1.93)	
Hyperactivity	99.94 (0.46)		99.06 (0.89)		-1.20 (.34)*		99.21 (0.77)	
Inattention	98.59 (1.36)		96.62 (4.11)		-3.02 (.44)**		97.41 (3.42)	
Global Impairment	3.13 (1.22)		3.36 (1.41)		1.24 (0.17)		3.24 (1.31)	

*Note.* \* $p \leq .05$  \*\* $p \leq .01$ ; OCD: Obsessive Compulsive Disorder; ADHD-RS-5: Attention Deficit/Hyperactivity Disorder Rating Scale 5. Means for the ADHD-RS-5 are percentile rankings matched to child age and gender.

**Table 3**  
*Principal Components Analysis of IASMHS*

	Components		
	1 (Attitudes)	2 (PBC)	3 (Subjective Norms)
1. There are certain problems which should not be discussed outside of one's immediate family.	<b>0.64</b>	0.03	-0.04
6. Having been mentally ill carries with it a burden of shame.	<b>0.65</b>	0.01	0.18
17. Having been diagnosed with a mental disorder is a blot on a person's life.	<b>0.68</b>	0.05	0.42
7. It is probably best not to know everything about oneself.	<b>0.68</b>	0.06	0.06
21. People with strong characters can get over psychological problems by themselves and would have little need for professional help.	<b>0.68</b>	0.01	0.48
9. People should work out their own problems, getting professional help should be a last resort.	<b>0.69</b>	-0.00	0.40
4. Keeping one's mind on a job is a good solution for avoiding personal worries and concerns.	<b>0.74</b>	-0.02	-0.20
3. I would not want my significant other (spouse, partner, etc.) to know if I were suffering from psychological problems.	<b>0.76</b>	0.09	-0.02
12. Psychological problems, like many things, tend to work out by themselves.	<b>0.77</b>	0.02	0.22
11. Important people in my life would think less of me if they were to find out that I was experiencing psychological problems.	<b>0.78</b>	0.00	0.08
24. I would be embarrassed if my neighbor saw me going into the office of a professional who deals with psychological problems.	<b>0.79</b>	0.03	0.08
20. I would feel uneasy going to a professional because of what some people would think.	<b>0.81</b>	-0.10	0.23
16. I would be uncomfortable seeking professional help for psychological problems because people in my social or business circles might find out about it.	<b>0.82</b>	-0.04	0.11
15. I would want to get professional help if I were worried or upset for a long period of time.	-0.21	<b>0.75</b>	0.15
10. If I were to experience psychological problems, I could get professional help if I wanted to.	-0.18	<b>0.75</b>	-0.01
22. I would willingly confide intimate matters to an appropriate person if I thought it might help me or a member of my family.	-0.09	<b>0.79</b>	0.11
8. If I were experiencing a serious psychological problem at this point in my life, I would be confident that I could find relief in psychotherapy.	0.00	<b>0.64</b>	0.20
13. It would be relatively easy for me to find the time to see a professional for psychological problems.	0.01	<b>0.76</b>	0.03
5. If good friends asked my advice about a psychological problem, I might recommend that they see a professional.	0.01	<b>0.65</b>	-0.26
19. If I believed I were having a mental breakdown, my first inclination would be to get professional attention.	0.17	<b>0.68</b>	-0.03

2. I would have a very good idea of what to do and who to talk to if I decided to seek professional help for psychological problems.	0.29	<b>0.60</b>	-0.29
23. Had I received treatment for psychological problems, I would not feel that it ought to be 'covered up'.	0.31	<b>0.50</b>	-0.14
18. There is something admirable in the attitudes of people who are willing to cope with their conflicts and fears without resorting to professional help.	0.29	0.14	<b>0.67</b>
14. There are experiences in my life I would not discuss with anyone.	0.57	-0.02	<b>0.61</b>

*Note.* IASMHS – Inventory of Attitudes Towards Seeking Mental Health Services; PBC – Perceived Behavioral Control

**Table 4**  
*Correlation Matrix*

	Asian Indian							European American						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
1. TPB Attitudes	1.00							1.00						
2. TPB Perceived Behavioral Control	.00	1.00						-.05	1.00					
3. TPB Subjective Norms	.67***	-.06	1.00					.87***	-.06	1.00				
4. BAC-P Total Score	-.12	.03	.01	1.00				-.41***	.05	-.35***	1.00			
5. Recognition of ADHD	.17	-.13	.16	.17	1.00			.42***	-.32***	.39***	-.23*	1.00		
6. Recruitment Method	.10	.07	.13	-.15	-.09	1.00		.25*	.19	.09	-.36***	-.17	1.00	
7. Intention to Seek Help	-.31**	-.11	-.42***	.16	-.17	-.04	1.00	.11	.63***	.12	.01	-.12	.02	1.00

*Note.* \* $p \leq .05$  \*\* $p \leq .01$  \*\*\* $p \leq .001$ ; TPB: Theory of Planned Behavior; BAC-P: Beliefs About Causes- Parent Scale where higher scores indicate greater endorsement of biopsychosocial etiology; Higher scores on “Recognition of ADHD” indicate inability to recognize ADHD; Higher scores on “Recruitment Method” indicate direct recruitment (as opposed to snowball sampling).



**Table 5**  
*Theory of Planned Behavior Variables*

	<b>Asian Indian (N= 102)</b>	<b>European American (N= 89)</b>		<b>Total Sample (N=191)</b>
<b>Variable</b>	<b>M (SD)</b>	<b>M (SD)</b>	<b>t (Cohen's D)</b>	<b>M (SD)</b>
Attitudes	24.43 (4.36)	24.60 (6.52)	0.20 (0.03)	24.51 (5.46)
Perceived Behavioral Control	27.25 (3.94)	29.54 (4.69)	3.62 (0.53) ***	28.32 (4.44)
Subjective Norms	23.06 (4.98)	23.65 (7.04)	0.66 (0.10)	23.34 (6.02)
Intention	20.74 (4.65)	22.33 (5.80)	2.07 (0.30) *	21.48 (5.26)

*Note.* \* $p \leq .05$  \*\*\* $p \leq .001$ .

**Table 6**  
*Hierarchical Regression Results for Hypothesis 1*

<b>Model</b>	<b>Variable</b>	<b><math>\beta</math></b>	<b><i>t</i></b>	<b>R</b>	<b>R<sup>2</sup></b>	<b>F</b>	<b>VIF</b>
1	Overall Model			.18	.03	1.98	
	Recognition of ADHD	-.17	-2.21*				1.1
	Recruitment Method	-.004	-.06				1.0
	BAC-P Total	.05	.64				1.0
2	Overall Model			.32	.10	3.42**	
	Recognition of ADHD	-.04	-.42				1.4
	Recruitment Method	-.02	-.20				1.1
	BAC-P Total	.01	.09				1.1
	Attitudes	-.07	-.50				3.8
	Perceived Behavioral Control	.25	3.34***				1.2
	Subjective Norms	-.10	-.76				3.5

*Note.* \*\* $p \leq .01$ ; ADHD: Attention Deficit/Hyperactivity Disorder; BAC-P: Beliefs About Causes – Parent Scale.

**Table 7**  
*Hierarchical Regression Results for Hypothesis 2*

TPB Variable	Model	Variable	$\beta$	$t$	R	R <sup>2</sup>	F	VIF
Attitudes	1	Overall Model			.459	.21	16.11***	
		Recognition of ADHD	.41	5.76***				1.06
		Recruitment Method	.17	2.50*				1.05
		BAC-P Total	-.15	-2.24*				1.03
	2	Overall Model			.462	.21	12.20***	
		Recognition of ADHD	.41	6.00***				1.08
		Recruitment Method	.15	2.15*				1.15
		BAC-P Total	-.16	-2.35*				1.10
		Ethnicity	-.06	.45				1.21
Subjective Norms	1	Overall Model			.349	.12	8.39***	
		Recognition of ADHD	-.27	-3.79***				1.06
		Recruitment Method	.15	2.16*				1.05
		BAC-P Total	.08	1.16				1.03
	2	Overall Model			.369	.14	7.10***	
		Recognition of ADHD	-.25	-3.49***				1.08
		Recruitment Method	.16	1.56				1.15
		BAC-P Total	.05	.70				1.10
		Ethnicity	-.13	-1.72				1.21
Perceived Behavioral Control	1	Overall Model			.387	.15	10.61***	
		Recognition of ADHD	.35	4.91***				1.06
		Recruitment Method	.17	2.39*				1.05
		BAC-P Total	-.10	-1.46				1.03
	2	Overall Model			.393	.15	8.20***	
		Recognition of ADHD	.36	5.00***				1.08
		Recruitment Method	.15	1.98*				1.15
		BAC-P Total	-.12	-1.2				1.10
		Ethnicity	-.08	-1.0				1.21

Note. \* $p \leq .05$  \*\*\* $p \leq .001$ ; ADHD: Attention Deficit/Hyperactivity Disorder; BAC-P: Beliefs About Causes – Parent Scale.

**Table 8**  
*Hierarchical Regression Results for Hypothesis 3*

Model	Variable	$\beta$	$t$	R	R <sup>2</sup>	F	VIF
1	Overall Model			.18	.03	1.98	
	Recognition of ADHD	-.17	-2.21*				1.06
	Recruitment Method	.00	-.05				1.05
	BAC-P Total	.05	.64				1.03
2	Overall Model			.33	.11	3.01**	
	Recognition of ADHD	-.03	-.31				1.40
	Recruitment Method	-.03	-.40				1.19
	BAC-P Total	-.01	-.10				1.14
	Attitudes	-.07	-.49				3.75
	Perceived Behavioral Control	.25	3.22***				1.17
	Subjective Norms	-.11	-.79				3.49
	Ethnicity	-.06	-.79				1.24
3	Overall Model			.52	.27	6.38***	
	Recognition of ADHD	-.04	-.51				1.48
	Recruitment Method	-.04	-.56				1.20
	BAC-P Total	.05	.66				1.16
	Attitudes	.07	.28				13.03
	Perceived Behavioral Control	.79	5.99***				4.17
	Subjective Norms	.24	1.06				12.45
	Ethnicity	-.06	-.80				1.25
	Attitudes *Ethnicity	-.09	-.44				10.70
	Perceived Behavioral Control * Ethnicity	-.39	-1.84***				10.80
	Subjective Norms *Ethnicity	-.58	-4.51				3.98

Note. \* $p \leq .05$  \*\* $p \leq .01$  \*\*\* $p \leq .001$ ; ADHD: Attention Deficit/Hyperactivity Disorder; BAC-P: Beliefs About Causes – Parent Scale.

### **Appendix: Materials and Measures**

- A. Prescreening Questionnaire
- B. Demographics Questionnaire
- C. Beliefs About Causes -Parent Scale
- D. Clinical Vignette
- E. Inventory of Attitudes towards Seeking Mental Health Services
- F. Intention Questionnaire

## Appendix A: Prescreening Survey

1. How would you rate your English proficiency?  
not proficient   somewhat proficient   proficient   native or native-like proficiency
2. How old are you?
3. Where do you live?  
United States                      Outside of U.S.A
4. Which ethnic group do you identify with?  
European American                      African American  
Hispanic                                      Asian Indian  
East Asian                                      Southeast Asian  
Pacific Islander                              Native
5. How many children are you the primary caregiver for? 0-10

*Please keep your one child with the most challenging behaviors in mind as you answer the following questions.*

6. 18 ADHD-RS-V items
7. Have you ever sought evaluation or treatment for your child's inattention, hyperactivity, or impulsivity from a health professional?  
Yes                      No
8. Does your child have a diagnosis of ADHD?  
Yes                      No

## Appendix B: Demographics Questionnaire

### Parent Demographics

1. Which gender identity do you identify with?

Male      Female

2. What is your marital status?

Single      Married

Widowed    Separated

Divorced

3. How many years have you lived in the United States?

0-100 sliding scale

4. What is your annual family income?

\$0- \$500,000 sliding scale

5. How involved are you in parenting your child with the most challenging behaviors?  
Parenting involvement is defined as the amount of time spent with your child. Out of all the available caregivers, those who spend the least amount of time with the child are least involved in parenting, and those who spend the most amount of time with their child are the most involved in parenting.

0 [not involved in parenting] – 10 [I alone am the primary caregiver]

### Child Demographics

*Please keep your one child with the most challenging behaviors in mind as you answer the following questions.*

1. How old is your child?

2. What your child's gender?

Male      Female

## Appendix C: Adapted Beliefs About Causes – Parent Scale

**BAC-P**

Sample question from original measure:

“Do you believe your child’s problems are due in part to your child’s lack of respect for authority or bad attitude?”	Yes	No
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Adapted question:

“I believe my child’s hyperactivity/ inattention is due in part to my child’s lack of respect for authority or bad attitude.”	Strongly disagree (1)	(2)	(3)	(4)	Strongly agree (5)
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## Appendix D: Adapted Clinical Vignette

**ADHD Vignette Sample**

Jane is your daughter's classmate. In school, she seems to pay more attention to things going on around her than her own work. Sometimes, she forgets what her teacher has told her to do and needs to be reminded. When the teacher asks the class a question, Jane often blurts out the answer before the teacher has a chance to finish. Jane often finds it hard to stay sitting down when she is supposed to and gets up or fidgets a lot. She has difficulty waiting her turn and butts into her classmates' conversations. In her spare time, Jane likes to play her computer and train with her athletics club. When her parents ask her to help around the house, she sometimes does not seem to hear them. She often does not finish her homework or chores. Jane talks nonstop when her family is watching TV. She finds it hard to organize her bedroom and regularly loses her books, computer games and other things she needs

*Alternative name for girls: Puja*

*Alternative names for boys: Jack; Arjun*

## Appendix E: Adapted Inventory of Attitudes Towards Seeking Mental Health Services

**IASMHS**

Sample question from original measure:

The term *professional* refers to individuals who have been trained to deal with mental health problems (e.g., psychologists, psychiatrist, social workers, and family physicians).

“People should work out their own problems; getting professional help should be a last resort”	Disagree (0)	(1)	(2)	(3)	Agree (4)
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Adapted question:

The term *professional* refers to individuals who have been trained to deal with mental health problems (e.g., psychologists, psychiatrist, social workers, and family physicians).

“If my child had inattention, hyperactivity/impulsivity, we would work it out ourselves; getting professional help should be a last resort”	Disagree (0)	(1)	(2)	(3)	Agree (4)
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### Appendix F: Intentions Questionnaire

The term *professional help* refers to help from individuals who have been trained to deal with mental health problems (e.g., psychologists, psychiatrist, social workers, and family physicians).

I intend to seek professional help for my child's inattention and/or hyperactivity/impulsivity									
1 (strongly disagree)	2	3	4	5	6	7	8	9	10 (strongly agree)
I will try to seek professional help for my child's inattention and/or hyperactivity/impulsivity									
1 (strongly disagree)	2	3	4	5	6	7	8	9	10 (strongly agree)
I plan to seek professional help for my child's inattention and/or hyperactivity/impulsivity									
1 (strongly disagree)	2	3	4	5	6	7	8	9	10 (strongly agree)

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