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MATERNAL SELF-EFFICACY AND PERCEIVED STIGMA AMONG MOTHERS
OF CHILDREN WITH ASD, ADHD, AND TYPICALLY DEVELOPING CHILDREN

A Dissertation Presented

by

SARA D. ROSENBLUM-FISHMAN

Submitted to the Office of Graduate Studies,
University of Massachusetts Boston,
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

December 2013

Clinical Psychology Program

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ABSTRACT

MATERNAL SELF-EFFICACY AND PERCEIVED STIGMA AMONG MOTHERS OF CHILDREN WITH ASD, ADHD, AND TYPICALLY DEVELOPING CHILDREN

December 2013

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Directed by Senior Lecturer Laurel Wainwright

Maternal self-efficacy (a mother's beliefs about her parenting competence) is an important area of mothers' wellbeing and overall family functioning. This study examined environmental factors that are related maternal self-efficacy among mothers of children with autism spectrum disorder (ASD group), mothers of children with Attention-Deficit/Hyperactivity Disorder (ADHD group), and mothers of typically developing children (Typical group). Environmental factors included (a) messages of criticism or blame about one's parenting competence (parenting-related perceived stigma), (b) child problem behaviors, (c) maternal stress, and (d) social support. One hundred eighty mothers of school-age children living in the United States completed the measures online. Results showed that mothers from the ASD group and the ADHD group reported higher levels of parenting-related perceived stigma than mothers from the Typical group.

Although mothers from the ASD group and the ADHD group reported lower levels of maternal self-efficacy compared mothers from the Typical group, this difference was no longer significant when child problem behaviors was controlled, indicating that maternal self-efficacy may be more related to children's disruptiveness level than a diagnostic category. Perceived stigma, child problem behaviors, and social support were all associated with maternal self-efficacy. Maternal stress mediated the relationship between child problem behaviors and maternal self-efficacy, and between social support and maternal self-efficacy. This study highlights the need for accessible parent-focused supports and interventions aimed at reducing child problem behaviors and maternal stress, and promoting maternal self-efficacy. Further, this research indicates that family-focused clinicians should be aware that many mothers of children with ASD and ADHD experience perceived stigma to a greater extent than mothers of typically developing children, and that clinicians can support mothers so that stigma experiences have less impact on mothers' sense of parental self-efficacy.

ACKNOWLEDGEMENTS

I have sincere appreciation to Dr. Laurel Wainwright, who has supported my work and professional development throughout my journey in graduate school. Dr. Wainwright has immeasurably influenced the ways I develop ideas, write, communicate, and teach. She has also gone beyond research mentor, ensuring that I have been successful at each stage of graduate school, offering guidance, and actively advocating on behalf of my success. This dissertation is not only a culmination of my graduate studies, but also is a testament to a successful collaboration between teacher and student. Thank you very much, Laurel.

Thank you to Drs. Abbey Eisenhower and Alice Carter for bringing your expertise and knowledge to strengthen this project. Both Dr. Carter and Dr. Eisenhower have contributed greatly to the development of my research and clinical skills during my time at UMass Boston. I am honored to have learned from them and to have them both on my committee.

Thank you very much to the research participants who expressed interest and chose to participate in this study. I am grateful and humbled that these mothers took time out of their busy lives to contribute to this work.

On a personal note, I would like to thank my family, whose unconditional love and encouragement strengthens me. Thank you to my father, who always believes in my potential and does whatever he can to support me. Thank you to my sister, whose optimism is inspiring, who balances me with rational calmness, and who is a true friend.

And to my husband, Howard, who nourishes me (with good cooking, hugs, and reassurance), challenges my mind, helps me to laugh, and loves me fully: thank you.

Lastly, I dedicate this dissertation to my mother, who passed away before I realized my desire to be a psychologist, but who instilled in me a passion for learning and compassion for people, and whose enthusiasm for life continues in me.

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CHAPTER 1

INTRODUCTION

Parenting a child brings with it joys, challenges, feelings of satisfaction, and feelings of self-doubt. *Maternal (or parental) self-efficacy* is a mother's (or parent's) estimation of how successful and competent she has been and will be at the tasks of parenting. It is a mother's sense of her ability to serve the needs of her child and to support her child's development optimally and competently (Coleman & Karraker, 1997; Jones & Prinz, 2005).

The self-efficacy construct originated in the 1970's from Albert Bandura, who described self-efficacy as "people's beliefs about their capabilities to exercise control over events that affect their lives" (Bandura, 1989, p. 1175). Bandura understood self-efficacy to be a self-assessment of one's ability to carry through with, control, and accomplish tasks/events. He theorized that people had a general sense of self-efficacy, as well as domain-specific areas of self-efficacy, such as in the area of parenting.

Parental self-efficacy is an important component to mothers' wellbeing. Previous research has shown that maternal self-efficacy is positively related to satisfaction with parenting (Coleman & Karraker, 2000), marital satisfaction, and family functioning (Sevigny & Loutzenhiser, 2009). Mothers with lower parental self-efficacy tend to experience more distress, reporting higher levels of parenting stress (Rutgers et al., 2007;

Sevigny & Loutzenhiser, 2009) and depression (Kuhn & Carter, 2006; Le & Lambert, 2008). Given these associations, understanding factors that influence maternal self-efficacy is a valuable area of study.

Factors that Influence and are Influenced by Parental Self-Efficacy

According to Bandura (1977), one's sense of self-efficacy (in any domain) originates from different sources: (1) observations of others carrying out that task – “vicarious experiences,” (2) one's actual experience in that domain – “performance accomplishments,” (3) one's physical arousal such as sense of relaxation or sense of stress – “emotional arousal,” and (4) feedback from others regarding one's ability in that domain – “verbal persuasion.” In regards to maternal self-efficacy, research has supported aspects of Bandura's theory in some ways, providing evidence that certain factors contribute to maternal self-efficacy, and also that maternal self-efficacy has important impacts on other areas of a mother's life, as will be expanded on below.

Vicarious experiences. Few studies have supported or examined the relationship between vicarious experiences at parenting and actual maternal self-efficacy.

Remembering one's own parents as warm and caring (a type of vicarious experience) has been found to be indirectly related to higher levels of maternal self-efficacy before women gave birth, but not post-natally (Leerkes & Burney, 2007). In regards to parental self-efficacy, evidence supporting the influence of vicarious experiences is very limited.

Performance accomplishments. There is much evidence that feeling successful about parenting is related to higher feelings of parental self-efficacy. Bandura proposed that a person gains self-efficacy about a task because he or she has been successful at that

task, and so that person will feel more confident about having success in the future. Bandura also suggested that the direction of this relationship may be reciprocal – self-efficacy about a task influences actual performance outcome for that task. In other words, high self-efficacy contributes to higher feelings of self-worth and beliefs in success, and people with higher self-efficacy are more motivated to persist at a task and achieve success because they believe that they will. Conversely, people with lower self-efficacy are less likely to persist and also less likely to be successful.

This suggests that maternal self-efficacy is not only *impacted by* parenting experiences, but also *contributes to* future competence in parenting. Research has supported this bidirectional relationship (Brody, Flor, & Gibson, 1999; Gilmore & Cuskelly, 2012; Teti & Gelfand, 1991; Jackson & Huang, 2000; Ohan, Leung, & Johnston, 2000). Additionally, a few studies have offered compelling evidence that maternal self-efficacy *influences* parenting practices more so than parenting practices influences self-efficacy (Deković et al., 2010; Dumka, Gonzales, Wheeler, & Millsap, 2010). Other findings linking maternal self-efficacy and parenting practices have shown that mothers with higher parental self-efficacy experience certain advantages (Knoche, Givens, & Sheridan, 2007), such as benefiting more from parent training programs (van den Hoofdakker et al., 2010). This body of evidence suggests that maternal self-efficacy likely impacts mothers' actual parenting competence.

Emotional arousal. Aspects of a caregiver's current environment and surroundings impact maternal self-efficacy (Teti, O'Connell, & Reiner, 1996). Children's behaviors, including how a mother (Coleman & Karraker, 2000; Johnston,

1996; Seigny & Loutzenhiser, 2009) and how others around her (Hastings & Brown, 2002; Mash & Johnston, 1983; Cutrona & Troutman, 1986) perceive her child, is related to maternal self-efficacy. Mothers who have children with more problem behaviors, a more difficult temperament, and/or who are less sociable rate themselves as having lower levels of maternal self-efficacy (Mash & Johnston, 1983; Cutrona & Troutman, 1986; Seigny & Loutzenhiser, 2009; Coleman, & Karraker, 2000). The relationship between child problem behaviors and maternal self-efficacy has been studied in a few longitudinal projects, providing evidence that child problem behaviors may lead to a decrease in maternal self-efficacy at future time points. For example, in a longitudinal study among 551 parents in Belgium, participants reported on their parental self-efficacy and their children's problem behaviors when their child was in elementary school, and then again six years later (Slagt, Deković, de Haan, van den Akker, & Prinzie, 2012). Using structural equation modeling, the authors found that child problem behaviors predicted parental self-efficacy at baseline and also six years later. However, the reverse was not true – parental self-efficacy at baseline did *not* predict child problem behaviors six years later. Gilmore and Cuskelly (2012) similarly found that reports of child problem behaviors for four- to six-year-old children predicted maternal self-efficacy when their children were 11 to 15 years old among mothers of children with Down syndrome. Gilmore and Cuskelly's findings, however, have limitations because the authors did not control for baseline level of maternal self-efficacy, so it is possible that baseline maternal self-efficacy was a significant variable that accounted for the relationship the authors

described. These findings suggest that there is some aspect of having a child with problem behaviors that may make parents feel worse about their parenting abilities.

Evidence suggests that one factor impacting the relationship between child problem behaviors and maternal self-efficacy is parenting (or maternal) stress. Stress is the appraisal of having limited resources to cope with demands from one's environment. This experience, which is physiologically and emotionally arousing, is an unpleasant one (Lazarus, 1993; McCubbin & Patterson, 1983). In line with Bandura's theory, research has found that this type of arousing experience is related to reductions in maternal self-efficacy (Farkas & Valdés, 2010; Hassall, Rose, & McDonald, 2005). Studies have also shown that "day-to-day 'hassles' of parenting" are correlated more strongly with family functioning and children's outcome, as opposed to distinct stressful events (Deater-Deckard, 1998, p. 315). Such day-to-day hassles include raising children with problem behaviors. Children who engage in more problematic behaviors often elicit vigilant parental monitoring, which can become taxing on parents; moreover, children's problematic behaviors may be unpredictable, disruptive, or destructive, which can leave parents feeling helpless and stressed (Duchovic, Gereksmeyer, & Wu, 2009; Hastings, 2002; Mash & Johnston, 1983; Serrata, 2012). Mothers who are stressed may have less time or energy to devote to the tasks of parenting, or towards their own self-care, and may feel less competent in their abilities to effectively parent their child.

Limited evidence does suggest that maternal stress mediates the relationship between children's problem behaviors and maternal self-efficacy. A study of 188 low-income single, black mothers of typical preschoolers found that parenting stress mediated

the relationship between child problem behaviors and maternal self-efficacy (Jackson & Huang, 2000). Mothers of children with more problem behaviors reported having significantly higher parenting stress ($r=.61, p<.001$). Parenting stress was also inversely related to perceived self-efficacy ($r=-.32, p<.001$). Using structural relations modeling, Jackson and Huang (2000) found that parenting stress was a significant mediator between child behavior problem and maternal self-efficacy. This suggests that raising a child with problem behaviors is a stressful experience, which subsequently decreases mothers' resources and makes them feel less effective as parents.

Mothers' perception of social support, particularly support regarding her parenting, also influences her sense of maternal self-efficacy. Cobb (1976) defined social support as, "information leading the subject to believe that he or she is loved, esteemed, and belongs to a network of mutual obligation" (p. 300). Mothers (of infants and school-age children) who report receiving emotional support and assistance with concrete tasks of parenting from family, friends, and colleagues report higher levels of maternal self-efficacy (Bornstein, Haynes, Pascual, & Painter, 2004; Cutrona & Troutman, 1986; Haldy & Hanzlik, 1990; Izzo, Weiss, Shanahn, & Rodriguez-Brown, 2000). Reciprocally, mothers who feel socially isolated tend to report lower maternal self-efficacy (McLaughlin & Harrison, 2006). The number of people in one's support network does not necessarily correlate with self-efficacy, but whether parents are satisfied with their level of social support is related to higher levels of parental self-efficacy (Crnic, Greenberg, Ragozin, Robinson, & Basham, 1983; Krauss, 1993; MacPhee, Fritz, & Miller-Heyl, 1996). It appears the impact on self-efficacy is not based

on the quantitative amount of social supports that one has, but rather the qualitative satisfaction one has regarding the support one receives from others.

There is limited evidence that social support also has a moderating effect regarding the impact of life stressors on coping abilities (Cobb, 1976), and as such may help parents feel more efficacious in the context of stressful situations, such as having a child with difficult behaviors. As written in the theoretical paper by Beresford (1994) on stress and coping experiences among parents of children with developmental disabilities, if a “resource [such as social support] is available then the individual is less vulnerable, or more resistant, to the adverse effects of stress . . . [In contrast] if an individual does not have access to a particular resource there is an increased risk of vulnerability to stress” (p. 175). For example, in a sample of 115 mothers of infants living in North Carolina, Leerkes and Burney (2007) found that for mothers who had a child with a difficult temperament (i.e., easily prone to frustration), if they reported lower satisfaction regarding social support from others, they were more likely to report lower maternal self-efficacy. However, if mothers felt satisfied with their level of social support, self-efficacy was not related to difficult child temperament. Leerkes and Burney hypothesized that social support may act as a buffer against challenging child behaviors; parents may receive praise and encouragement from others, as well as tangible resources, which could make difficult child behaviors less stressful, less emotionally arousing, and more manageable. A study of mothers of school-age children and adolescents with intellectual disabilities living in England provides support for this assertion (Hassall et al., 2005): mothers who reported more social support also felt more in control regarding

aspects of their parenting and reported less stress (Hassall et al., 2005). Another study among mothers of toddlers with developmental disabilities (e.g., Down syndrome, motor impairment) found that the helpfulness from social support within their networks was a significant factor related to mothers' reporting lower stress (Krauss, 1993). It is possible that social support provides parents with additional coping resources; subsequently, environmental demands (e.g., child problem behaviors) are less stressful.

One model that integrates these factors is this: the presence of child problem behaviors indirectly predicts maternal self-efficacy via a direct relationship with maternal stress level, which acts as a direct predictor of maternal self-efficacy. At the same time, higher levels of social support reduce the level of parenting stress and weaken the relationship between child problem behaviors and maternal stress. Although the role of social support as a moderator/buffer between child problem behaviors and parenting self-efficacy is compelling and has theoretical merit (Hastings, 2002), some studies examining the interaction of stress and social support on parental self-efficacy have failed to find such a relationship (Bornstein et al., 2004; Cutrona & Troutman, 1986; Duchovic et al., 2009). However, additional support for the moderator role of social support (e.g., spouse support) among mothers exists, such as studies that have examined the impact of economic stress on positive parenting behaviors (Simons, Lorenz, Conger, & Wu, 1992) or that examined the impact of life stress on general life satisfaction (Crnic et al., 1983). Additional studies exploring this relationship are important to determine when and how social support may play a protective role for parents.

Verbal persuasion. Parents receive feedback from others – “verbal persuasion” – about their parenting capacities, which Bandura hypothesized also contributes to one’s sense of self-efficacy. This feedback might be in the form of praise or encouragement (i.e., social support). On the other hand, a mother may experience instances of criticism and blame from others regarding her child’s behaviors and her own parenting quality (Ryan, 2005). Previous researchers, especially in the developmental disability field, have used the term *perceived stigma* to describe this experience of blame and criticism about one’s parenting (Baxter, 1989; Green, Davis, Karshmer, Marsh, & Straight, 2005). Although Bandura has postulated that such messages about one’s parenting capabilities would impact parents’ sense of parental self-efficacy, this relationship between experiences of perceived stigma and parental self-efficacy has not been studied quantitatively. Perceived stigma seems to be an important parenting experience to examine and there is a small body of evidence to suggest that perceived stigma does impact how mothers feel about their parenting effectiveness. Below is a more detailed description of perceived stigma; how perceived stigma relates to the parenting experience; and why this concept is especially important to the lives of mothers of children with developmental disabilities, such as mothers of children with autism spectrum disorder (ASD) and mothers of children with Attention-Deficit/Hyperactivity Disorder (ADHD).

Perceived Stigma: A Form of Verbal Persuasion

Stigma defined. The term “stigma” originated from the Greeks to describe physical marks that were forcibly cut or burnt onto another’s body, designating a person

as bad or “other” (Goffman, 1963). Today, stigma is oftentimes based on an identifying label or mark, such as a diagnosis (e.g., AIDS) or a physical abnormality (e.g., facial deformity) that distinguishes an individual as different or someone to be avoided (Link & Phelan, 2001). Individuals with certain diagnoses, such as mental illness, developmental disabilities, epilepsy, or obesity have reported experiencing stigma because of their condition (Cooney, Jahoda, Gumley, & Knott, 2006; Fernandes, Snape, Beran, & Jacoby, 2011; Lewis et al., 2011; Moses, 2010; Perlick et al., 2001). For example, persons with schizophrenia may be stigmatized because there is a societal belief that individuals with schizophrenia are dangerous individuals (Overton & Medina, 2008). There is a negative and often unjustified attribute associated with individuals who carry the label/mark of the stigmatized group (Weiner, 1993), which can result in judgment, blame, and or avoidance. For example, due to such stigma beliefs, employers may be reluctant to hire someone who is known to have a diagnosis of schizophrenia because they worry about the person being prone to violence (Corrigan & Watson, 2002).

Courtesy stigma. Individuals associated with a stigmatized person (e.g., parent, child, spouse, etc.) may experience *courtesy stigma*, which is stigma due to association (Birenbaum, 1970). This means that because an individual is affiliated with a stigmatized person they may be stigmatized, even though they do not themselves possess the stigmatized label/mark (such as a diagnosis). For example, the relative of a person with schizophrenia may experience stigma not because s/he has a mental illness, but because s/he is closely related to a person who has a mental illness (Corrigan & Miller, 2004). Essentially, s/he becomes tainted because of his/her affiliation. A family member of a

person with schizophrenia may find that when friends learn of their relative's diagnosis, the friends may be less inclined to socialize with them (Veltman, Cameron & Stewart, 2002).

Parenting-related perceived stigma. It is also possible that individuals may experience stigma based not on a known diagnosis or a physical attribute that they (or their relative) carries, but rather based on their own behaviors that are deemed socially inappropriate/unacceptable by others (Fernández & Arcia, 2004). The socially discredited status may occur because of inferences about the stigmatized person's capabilities and/or qualities based on the person's behaviors. In regards to this understanding of stigma, Mukolo, Heflinger, and Wallston's (2010) definition is useful: stigma is "an actual/inferred attribute that damages the bearer's reputation and degrades him/her to a socially discredited status" (p. 93).

These socially inappropriate/unacceptable behaviors could be symptoms of a disability. For example, an individual with intellectual disability may experience stigma based on his/her unusual behaviors (e.g., difficulty counting bus fare, lack of clarity when communicating, etc.) when interacting with others, which is different from that same individual experiencing stigma because someone is aware of his/her actual diagnosis (Ali, Strydom, Hassiotis, Williams, & King, 2008). This type of stigma is attributed to someone as a result of an inferred attribute based on behaviors (regardless of whether that attribute is accurate).

Individuals who do *not* carry a diagnosis can also experience this type of behavior-based stigma. For example, parents of children with developmental disabilities

may have their parenting skills stigmatized, based on the unusual behaviors of their children and their own reactions to those behaviors. Qualitative studies have recently provided evidence that parents of children with ASD and parents of children with ADHD do experience perceived stigma regarding their parenting abilities and practices (Farrugia, 2009; Gray 2002; Harborne, Wolpert, & Clare, 2004; Peters & Jackson, 2008). In particular, parents identify being judged negatively and blamed by others for their children's misbehaviors that are actually symptomatic of the diagnosed disorder (Farrugia, 2009; Gray, 1993; Gray 2002; Harborne et al., 2004; Peters & Jackson, 2008). In this paper such experiences will subsequently be termed *parenting-related perceived stigma*.

Parenting-Related Perceived Stigma and Mothers of Children with ASD & ADHD

Parenting similarities between ASD and ADHD. Although ASD and ADHD are distinct neurodevelopmental disorders with notable diagnostic differences, there are some experiential similarities in parenting a child with ASD or ADHD, which make them interesting to study side-by-side. Parents of children with ASD and parents of children with ADHD both have children who engage in socially unsanctioned behaviors that are evident in the public sphere. By definition, children with ASD have limited awareness of how their behaviors may impact others and subsequently may engage in odd and inappropriate behaviors, sometimes directed toward others (American Psychiatric Association, 2013). Children with ADHD often are highly impulsive and may engage in behaviors that are disruptive, offensive, or destructive because they have difficulty controlling their impulses (American Psychiatric Association, 2013).

Unlike some developmental disorders that are more easily identifiable based on physical appearance (e.g., Down's syndrome, Cerebral Palsy, etc.), children with ASD and children with ADHD generally have a physical phenotype of a typical child. Because they look typical, a naïve observer may assume that they are, in fact, typically developing, and expect them to behave in a typical way (Ryan, 2005). A quote from a mother of a child with ASD exemplifies this point well: "Actually, there were times when I thought, 'God! I wish he were Down's syndrome,' because people would leave me alone. They would see the Down's syndrome [and] know there was a problem" (Gray, 2002, p. 743). When children display disruptive or unusual behaviors parents are often held responsible for their children's misconduct (Cahill, 1987). To that end, parents of children with ASD and parents of children with ADHD do report being held responsible and blamed by others (e.g., strangers in public, teachers, and some family members) for their child's behaviors that are often symptoms of the neurodevelopmental disorder, and which are sometimes beyond parents' control (Harborne et al., 2004; Meirsschaut, Roeyers, & Warreyn, 2010).

For both ASD and ADHD, there are genetic factors as well as influences from non-genetic environmental exposures that contribute to the disorder; however, no genetic test exists for either of these conditions and their etiologies are not completely understood (Interagency Autism Coordinating Committee, 2010; Smalley, 1997). Children are diagnosed based on extensive clinical behavioral observation and by reports from multiple individuals who are familiar with the child. Given the subjective nature of these diagnoses, and the lack of physiological or biological indicators for the disorders'

presence, individuals observing the child may question the validity of the diagnosis. This could even include individuals who are familiar with the child, such as staff from the child's school or family members, who may attribute their difficult behaviors to willfulness and/or lack of discipline, as opposed to a developmental disorder.

Parenting children with ASD or ADHD. A number of qualitative studies have identified that parents of children with ASD or ADHD feel overt criticism from others regarding their parenting abilities (Gray, 2002), as well as more subtle experiences of being perceived as different or separate from parents with typically developing children (Peters & Jackson, 2008). For example, in a qualitative study of parents of children with ASD living in Australia, parents described experiencing looks or glares, rude comments, and unsolicited advice about their parenting, including advice that “they should smack their children” (Farrugia, 2009, p. 1022). Another Australian qualitative study asked parents of children with ASD, *Do you feel that people treat you or your family differently because of your child's illness?* and about half of the parents interviewed answered yes to this question, affirming that they themselves or members of their family experience stigma (Gray, 1993). Although this study was not designed to be quantitative, these numbers suggest that parenting-related perceived stigma is present for a substantial number of families of children with ASD. According to this study's author, “the parents in this study often reported that among the most unpleasant aspects of difficult public encounters was the way in which their abilities as parents were seemingly doubted” (Gray, 1993, p. 110).

In a more recent study, Gray (2002) looked at stigma experiences of parents of children with high functioning autism or Asperger's disorder. Although Gray described the parents' experiences as *courtesy stigma*, quotes from the study indicate that the stigma experiences reported by the parents was often based on others' observations of the child's behavior, as well as judgments the parents perceived about their parenting competence, as opposed to knowledge of the child's diagnosis. For example, a mother described how she felt others react negatively when her son with high functioning autism misbehaves in public:

I can walk through shopping centre [*sic*] after shopping centre [*sic*] and no one knows my child's autistic or he's got a problem. So, if he sees a drink machine and he wants a drink, and I haven't got the right change and he stands there . . . and screams, "I want a drink!", [*sic*] it runs through my mind, "What must some people be thinking?" . . . Do you say to them the reason he's carrying on like this is because he is autistic? (Gray, 2002, p. 743)

For this mother, the experience of being stigmatized is based on her perception of others' reactions towards her when they witness her son's unusual and disruptive behaviors.

Another quote from a mother shows how a stranger explicitly questioned her parenting capabilities based on her son's misbehavior:

We went for a walk [and a] bike rider was going through . . . and [my son] got this plastic bag and just threw it at this lady. And he was standing right here in front of her. Oh, and she said, "How dare you do that. Can't you keep control of your kids" (Gray, 2002, p. 745).

This parent experienced a direct criticism of her parenting skills. Such quotes demonstrate how parents of children with ASD have their parental competency questioned by others who observe their interactions with their children.

Parents of children with ADHD also experience parenting-related perceived stigma (dosReis, Barksdale, Sherman, Maloney, & Charach, 2010). Another qualitative study from Australia examined the experience of parenting a child with ADHD (Peters & Jackson, 2008), and participants described having their parenting behaviors scrutinized and stigmatized based on the behaviors of their children: “The hard part is really, what you say, people looking at you and judging you for being so outspoken and thinking that there’s something wrong with you instead of the kid. I think they’re judging me” (Peters & Jackson, 2008, p. 66). Another qualitative study based near Boston, Massachusetts also found that mothers of school-age boys with ADHD felt held responsible and criticized for their son’s disruptive behaviors (Singh, 2004). For example, a mother in this study described, “I would have people in the supermarket, on the street, everywhere, look down on him or say well, you know, you can’t keep him in control” (Singh, 2004, p. 1200).

Norvilitis, Scime, and Lee (2002) conducted one of the few quantitative studies examining the parenting-related perceived stigma experience among parents of children with developmental disabilities, focusing on mothers of school-age children with ADHD in upstate New York. The researchers used interview questions with mothers, asking how frequently their parenting was criticized by others and whether strangers made negative comments about their parenting; responses were scored on a five-point likert

scale. Compared to mothers of typically developing children, mothers of children with ADHD reported more negative comments from strangers and acquaintances (Norvilitis et al., 2002). This suggests that mothers of children with ADHD experience stigma based on their child's behaviors, and that their stigma experience is beyond what is experienced by parents of typically developing children.

Most of these reports regarding parenting-related perceived stigma describe how mothers experience stigma from strangers within public settings. Other contexts in which parents perceive parenting-related stigma is within the family system or within the school environment (Meirsschaut et al., 2010; Peters & Jackson, 2008; Segal, 2001). In the study by Norvilitis et al. (2002), mothers of children with ADHD reported more frequent criticism of their parenting style from those close to them compared to mothers of typically developing children. A qualitative study among parents of school-age children with ADHD conducted in the United Kingdom (Harborne et al., 2004) found that parents felt blamed by individuals familiar with the child and family (such as teachers and other family members) for causing their child's problematic behaviors. One mother described how her husband's family "think we're atrocious parents and I think my sister does. They think it's us not disciplining them" (Harborne et al., 2004, p. 331). Another parent similarly reported that, "my mother-in-law basically said 'well he's a naughty little boy, do something about him'" (Harborne et al., 2004, p. 333). Within the school setting, parents of children with ASD and parents of children with ADHD sometimes experience conflict with school staff related to difficulties managing the child's problem behaviors in school and the school's expectation that parents should fix the problem (Harborne et al.,

2004; Gray, 2002). According to a mother of a son with ASD, the deputy principal from the school asked her, “Well, we know he’s got a diagnosis but, can’t you just talk to him” (Farrugia, 2009, p. 1023). This mother reflected, “I mean yes I can talk to him until I’m blue in the face but it’s not going to help. They just had no concept whatsoever of what they were dealing with” (Farrugia, 2009, p. 1023). These parents reported experiencing personal blame for their child’s behavior in the form of stigma about their parenting quality, despite that fact that the individuals who were expressing the blame were aware of the child’s diagnostic status and were familiar with the parents. Parents of children with developmental disabilities experience stigma from many individuals with whom they and their child interact, both within the public and within personal spheres.

What is known about parenting-related perceived stigma is based primarily on mothers, as most of these studies have focused primarily or exclusively on mothers (Farrugia, 2009; Harborne et al., 2004; Norvilitis et al., 2002; Mak & Kwok, 2010). Additionally, studies that focused on both mothers and fathers have found that mothers reported stigma experiences more often than fathers (Gray, 2002; Gray, 1993). A quote from a mother of a child with ADHD, describing her son’s disruptive behaviors in church, underscores such gender differences: “I couldn’t get him to stop at all, and people would just be turning around and looking at me like why couldn’t I do something about him. My husband is sitting there too, but they’re looking at me” (Singh, 2004, p. 1200). In regards to parenting-related perceived stigma, mothers appear to have an experience unique from fathers.

Parenting-Related Perceived Stigma and Maternal Self-Efficacy

Although there have not yet been quantitative research studies examining the relationship between parenting-related perceived stigma and maternal self-efficacy, some research does suggest that parenting-related perceived stigma impacts a parent's sense of self-efficacy. Fernández and Arcia (2004) conducted interviews with 63 Latina mothers of school-age children with disruptive behaviors. Based on these interviews, (a) mothers' perception of stigma (experiencing shame or disapproval/blame from others related to their children's behaviors) and (b) their sense of parental self-efficacy were each coded into dichotomous categories: (a) (1) no perception of stigma or (2) some perception of stigma; and (b) (1) no or some doubts in ability to manage child or (2) feeling incompetent to manage child's behaviors. They found that 95% of mothers who were coded as *not* having experienced stigma were also coded as having no or some doubts regarding their ability to manage their children. On the other hand, 58% of mothers who were coded as having experienced *some stigma* were coded as having no or some doubts regarding their ability to manage their children – a difference of nearly 40%. These researchers did not present data for whether this difference in percentage is significant, but this writer calculated the Chi Square for these four groups be equal to 6.77, which is significant at $p < 0.01$. This suggests that there is a relationship between parenting-related perceived stigma and maternal self-efficacy.

Qualitative studies have also provided evidence that parental stigma experiences may impact parenting self-efficacy. For example, Harborne et al. (2004) stated that “blame [from others] led parents [of children with ADHD] to question their own

judgment” (p. 334), suggesting that perceiving parenting-related stigma from others impacted how parents thought about themselves. In another qualitative study among mothers of children with high-functioning ASD, a mother described that it is hard not to feel that her child’s behavior is reflective of her parenting skills, even if she intellectually believes that this is not true:

As a mother, when a child sort of acts up . . . you don’t want him to do it, because it’s a bit embarrassing. And you feel like it reflects on you a little bit. I mean I’m intelligent enough to know that that’s not the case, but it’s very difficult to take yourself away from the situation. (Gray, 2002, p. 739)

A few quantitative studies did not measure self-efficacy, but perceived stigma was found to be related to other areas of maternal wellbeing. For example, in their sample of mothers of school-age children with ADHD, Norvilitis et al. (2002) found that frequency of criticism from strangers about their parenting had a moderately strong and significant relationship with mothers’ report of depression ($r=.59, p<.01$) and was inversely related with perceived social support ($r=-.44, p<.05$). Another study among parents of young children with special needs (i.e., autism, intellectual disability, and developmental delay) found that parents who reported more courtesy stigma (related to their child’s diagnosis) reported higher depression symptoms and more negative interactions with their own parents (Mickelson, 2001). Although these studies did not assess parental self-efficacy, feeling depressed and experiencing insufficient social support are both risk factors for a deflated sense of parental self-efficacy (Kuhn & Carter, 2006; Le & Lambert, 2008; McLaughlin & Harrison, 2006).

Maternal Self-Efficacy Among Parents of Children with ASD & ADHD

Among mothers of children with ASD and ADHD, studying potential contributors to self-efficacy is valuable given the difficulties faced by many of these parents. Parents of children with ASD and ADHD often report a higher incidence of stress and depression compared to parents of typically developing children (Baker-Ericzén, Brookman-Fraee, & Stahmer, 2005; Beck, Young, & Tarnowski, 1990; Dumas, Wolf, Fisman, & Culligan, 1991; Gupta, 2007; Shelton et al., 1998; Mash & Johnston, 1983; Tomanik, Harris, & Hawkins, 2004; Weiss, 2002; Wolf, Noh, Fisman, & Speechly, 1989), and in comparison to parents of children with other developmental disabilities (Blacher & McIntyre, 2006; Dumas et al., 1991; Weiss, 2002). Given the association between stress/depression and lowered feelings of self-efficacy (Kuhn & Carter, 2006; Le & Lambert, 2008; Rutgers et al., 2007; Sevigny & Loutzenhiser, 2009), parents of children with ASD and ADHD are at risk for lowered parental self-efficacy. Additionally, the temperamental, behavioral, and social problems that are common among children with ASD or ADHD (e.g., disruptive behaviors, communication difficulties, social skill deficits, impulsive behaviors) are also related to lower parental self-efficacy (Mash & Johnston, 1983; Cutrona & Troutman, 1986; Sevigny & Loutzenhiser, 2009; Coleman, & Karraker, 2000). Considering these combined factors, maternal self-efficacy among mothers of children with ASD and ADHD is at risk for being low.

Interestingly, there is inconsistency in research findings regarding how maternal self-efficacy among mothers of children with ASD and ADHD compares to mothers of typically developing children. The following set of results will be summarized with the

gender-neutral term *parent*, since some of the studies available focused exclusively on mothers, while others included both mothers and fathers.¹ Regarding parents of children with ASD, some recent studies have found that they reported similar levels of parental self-efficacy as control group parents (Al-Kandari & Al-Quashan, 2010; Osborne & Reed, 2010; Rutgers et al., 2007), whereas other studies have found that parents of children with ASD reported lower levels of parental self-efficacy compared to controls (Meirsschaut et al., 2010; Rodrigue, Morgan, & Geffken, 1990). Studies focusing on parents of children with ADHD are somewhat more consistent: most studies have found that reported levels of parental self-efficacy was lower compared to control parents (Finzi-Dottan, Triwitz, & Golubchik, 2011; Johnston, 1996; Mash & Johnston, 1983; Rogers, Wiener, Marton, & Tannock, 2009; Shelton et al., 1998), although a few studies have found that parents of children with ADHD reported similar levels of self-efficacy compared to controls (Beck et al., 1990; Johnston & Pelham, 1990). Much of this research, particularly the more recent studies, was conducted outside of the United States (Al-Kandari & Al-Quashan, 2010; Finzi-Dottan et al., 2011; Meirsschaut et al., 2010; Osborne & Reed, 2010; Rogers et al., 2009; Rutgers et al., 2007), which further limits the data interpretation when generalizing to families in the United States. Conducting a study that compares maternal self-efficacy among mothers of children with ASD, ADHD, and mothers of typically developing children would be a valuable contribution to the

¹ Whether the studies focused only on mothers or included mothers and fathers did not correspond with the studies' findings.

literature and would provide a comparative analysis of maternal self-efficacy among different groups of mothers living within the United States.

Potential Differences in Parenting Children with ASD & Parenting Children with ADHD

According to the qualitative research available, parents of children with ASD and parents of children with ADHD seem to experience similar instances of stigma based on the *behaviors* of their children. But, data suggests that parents have a different stigma experience regarding perceptions of their child's diagnostic label. For parents of children with ASD, the qualitative studies available indicated that parents' description of perceived stigma focused primarily on others' reactions to the *behavior* of their child (Farrugia, 2009; Gray, 1993; Gray, 2002). On the other hand, for the studies that investigated perceived stigma among parents of children with ADHD, parents described perceiving stigma from others based *both* on others' reactions to their child's behavior, and also others' reactions of their child's diagnosis. For example, in a qualitative study by Peters and Jackson (2008), one mother of a child with ADHD reported, "There's so much negative stigma with ADHD . . . people use ADHD as an excuse for bad behaviour [*sic*]" (p. 66). Another mother in the same study said that she sometimes would tell others that her son had Asperger's disorder, rather than his actual diagnosis of ADHD, because she believed that there was more tolerance and less judgment towards parents of children with Asperger's disorder (Peters & Jackson, 2008).

Recent articles suggest there is a level of uncertainty about the ADHD diagnosis within contemporary society, with entities questioning or denying ADHD as a valid

neurodevelopmental disorder (Buitelaar & Rothenberger, 2004; Gold, 2010; Hinton & Wolpert, 1998; Mather, 2012; Scuitto & Eisenberg, 2007). This sentiment is reportedly evident in media outlets (e.g., television, radio, internet, editorials, etc.; Scuitto & Eisenberg, 2007) as well as in day-to-day conversations among “everyday” individuals (Danforth & Navarro, 2001). Some scholarly articles have explicitly questioned the veracity of the ADHD construct (Visser & Jehan, 2009; Wheeler, 2010), suggesting that the ADHD diagnosis is simply a social construct, rather than a valid psychiatric disorder with neurodevelopmental origins (see review by Faraone, 2005). Scholars have expressed that characteristics of ADHD are really typical child (especially boy) behavior, and that the ADHD diagnosis and the stimulant medication treatment used for ADHD are tools for adults to subdue or control children needlessly (Mather, 2012; Stolzer, 2005). Subsequently, this would suggest that either (1) ADHD-type behavior is really typical for children, but our society (e.g., schools) are not serving the needs of our children (Danforth & Navarro, 2001; Wheeler, 2010); or (2) these ADHD-type behaviors are not typical, but that the cause of these behaviors are due to a disrupted environment, such as poor parenting, rather than atypical biology (Buitelaar & Rothenberger, 2004; Danforth & Navarro, 2001).

This level of diagnostic denial does not seem to be apparent regarding ASD. This writer was not able to find articles of a similar content in regards to ASD. In contrast, contemporary literature about the diagnostic construct of ASD has often focused on the rising prevalence of ASD (Charman, 2002; Hertz-Picciotto & Delwiche, 2009; Holburn, 2008), and whether the rise in diagnosed cases of ASD is truly a rise in the incidence of

ASD or due to the expansion of ASD diagnostic criteria (Fombonne, 2003; Gernsbacher, Dawson, & Goldsmith, 2005; Wing & Potter, 2002). There also exists controversy related to the causes of ASD, with different hypotheses about the role of environmental factors (e.g., prenatal environment, post-natal chemical exposure) and genetic influences (Herbert, Sharp, & Gaudiano, 2002; Kaufman, 2010; Rutter, 2005; Waldman, Nicholson, Adilov, & Williams, 2008). Overall, the ASD diagnosis is widely understood to be a serious developmental disability that is worthy of attention from the research and clinical community, and there does not appear to be a movement denying the validity of the diagnosis in a way that exists for ADHD.

Given this societal context, type of child diagnosis may change how environmental factors might influence maternal self-efficacy. A mother of a child with ADHD may be aware that others around her question the legitimacy of ADHD and that others may see the diagnostic label as an excuse for ineffectual parenting. This could create a different type of experience for parents of children with ADHD versus ASD that goes beyond the differences in symptoms between the two disorders. It is possible that because of the high level of acceptance regarding the diagnosis of ASD, parenting a child with ASD may mitigate the experience of environmental stressors (e.g., perceived stigma or child problem behaviors) in a way that is different from parenting a child with ADHD.

The Current Study

This study focused purposefully on mothers. Many parenting studies have recruited mothers primarily or exclusively without explanation as to why. Contemporary studies have commented that there is insufficient research examining fathers and that

researchers know relatively little about the fathering experience. Although continued studies examining the impact of fathers on their children is undoubtedly important, the current study is focused specifically on mothers for a few reasons. Mothers seem to be particularly vulnerable to the experience of parenting-related perceived stigma (Gray, 1993; Gray 2002). This may be because women are generally assumed to be the primary caregivers of children, and other persons who interact with mothers may have high expectations for mothers' competency at parenting (Ryan & Runswick-Cole, 2008). Among parents of children with special needs, evidence suggests that mothers may also have a lower sense of parental self-efficacy and general self-esteem compared to fathers, as demonstrated by studies conducted among parents of children with ADHD (Hoza et al., 2000) and parents of children with developmental disabilities (Trute, Hiebert-Murphy, & Levine, 2007). This suggests that mothers have a parenting experience that is distinct from fathers' experience, and deserves to be examined separately. In this paper, the population studied is purposely referred to as "mothers," as opposed to the gender neutral term "parents," in order to emphasize the unique challenges that mothers have parenting their child with a disability, as suggested by Home (2002).

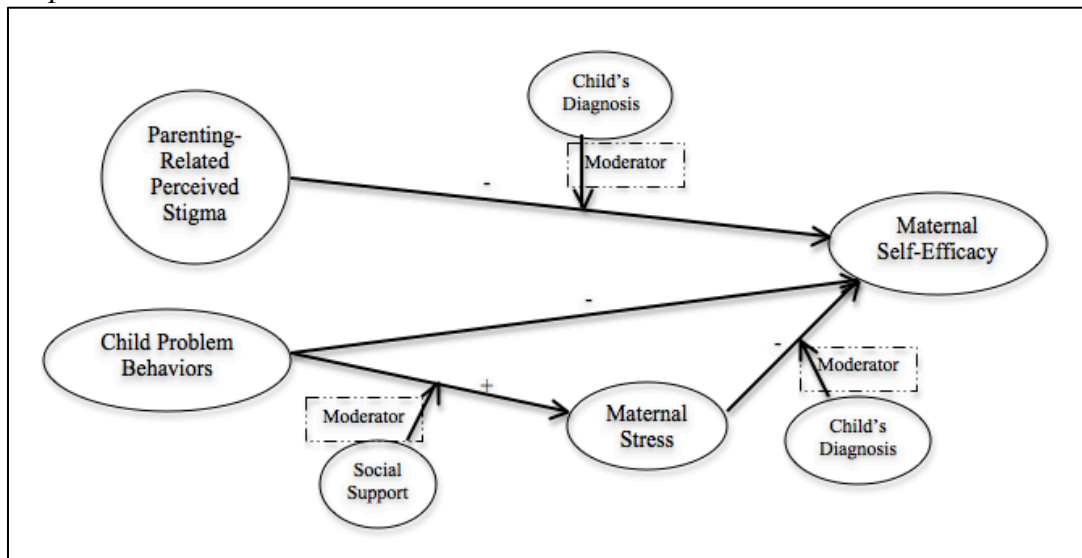
Hopefully this study will stand in contrast to the studies in the past that have pathologized the experience of mothers of children with developmental disabilities (see review by Blacher & Baker, 2002), particularly mothers of children with ASD (Bettelheim, 1967; see review by Pisula, 2003). Highlighting the *strengths* of families of children with developmental disabilities is a growing trend in disability research over the past decade (Maul & Singer, 2009). This trend is an important one so that families of

children with a developmental disability are not only portrayed as stressed or depressed; but rather, families are also understood to be resourceful, empowered, and resilient (Ryan & Cole, 2009; see review by Bekhet, Johnson, & Zauszniewski, 2012). Decades ago, mothers of children with autism were erroneously blamed for having caused the disorder within their child (Bettelheim, 1967). Although psychologists have abandoned this psychogenetic theory, and although there are currently well-established theories of genetic and environmental causes of ASD and ADHD (Rutter, 2005; Thapar, Cooper, Eyre, & Langley, 2013; Wing & Potter, 2002), it is important to understand whether mothers of children with developmental disabilities *still* feel blamed by others for their children's problem behaviors (Gray, 2002). It is also possible that mothers of children with ASD may show resilience to their experience of parenting-related perceived stigma, in a way that may not be evident for parents of children with ADHD, because of differences in how the public understands ASD as opposed to ADHD (Singh, 2004). In light of the previous blame attributed to parents of children with ASD, having a strengths focus to research among these populations is a much needed step in order for families of children with developmental disabilities to be understood in complete and balanced ways.

This study is a contribution to the literature on parenting children with developmental disabilities for a number of reasons. As far as this writer is aware, no previous study has attempted to measure parenting-related perceived stigma quantitatively among mothers of children with ASD and only one study exists among mothers of children with ADHD (Norvilitis et al., 2002). The current study gathered quantitative data on parenting-related perceived stigma for mothers of children with ASD

and mothers of children with ADHD, as well as mothers of typically developing children. This allowed for comparison of the perceived stigma construct among these groups. This research also assessed the validity of a model specifying variables that contribute to a mother's sense of self-efficacy among mothers of children with ASD, mothers of children with ADHD, and mothers of typically developing children (see Figure 1). One of these variables is parenting-related perceived stigma, which has yet to be examined in relationship to maternal self-efficacy. Additionally, this study compared reported levels of maternal self-efficacy among mothers of children with ASD and ADHD, and mothers of typically developing children. Given the present ambiguity regarding how maternal self-efficacy among mothers of children with developmental disabilities compares to that of mothers of typically developing children, this information will be a valuable contribution to the field.

Figure 1
Proposed Model



Specific Aims

The goals of this study were:

- 1) To quantify and to compare parenting-related perceived stigma among mothers of children with ASD, mothers of children with ADHD, and mothers of typically developing children.

Exploration 1: To assess whether there were significant differences in parenting-related perceived stigma based on context, this exploration examined the parenting-related perceived stigma scores across different contexts: (a) public sphere, (b) school environment, and (c) family members.

Hypothesis 1: Mothers of children with ASD and mothers of children with ADHD would report higher levels of parenting-related perceived stigma (total score) than mothers of typically developing children. There would be no group differences in parenting-related perceived stigma between mothers of children with ASD and mothers of children with ADHD.

- 2) To explore group differences regarding maternal self-efficacy.

Exploration 1: This exploration investigated whether there were group differences in maternal self-efficacy level among the three diagnostic groups: (a) mothers of children with ASD, (b) mothers of children with ADHD, and (c) mothers of typically developing children.

- 3) To assess the validity of a model regarding variables that contribute to mothers' sense of self-efficacy (see Figure 1).

Hypothesis 1: Parenting-related perceived stigma would predict maternal self-efficacy, and this relationship would be moderated by the child's diagnostic status.

Hypothesis 2: Child problem behaviors would be negatively related to maternal self-efficacy, and this relationship would be mediated by maternal stress and moderated by social support in order to support a mediated-moderation model or a moderated-mediation model.

Hypothesis 3: Child problem behaviors would be negatively related to maternal self-efficacy, and this relationship would be mediated by maternal stress and moderated by child's diagnostic group in order to support a mediated-moderation model or a moderated-mediation model.

CHAPTER 2

METHOD

Design

This study utilized a cross-sectional design. Data was collected via self-report questionnaire through a secure electronic website. Participants had an unlimited amount of time to complete the questionnaire, and they were able to complete the questionnaire over multiple sessions.

Participants

Three groups of mothers were recruited to participate in this study: (a) mothers of children with ASD (ASD group), (b) mothers of children with ADHD (ADHD group), and (c) mothers of typically developing children (Typical group). Eligible participants had a child (the “target child”) who was between the ages of six- and 11-years-old and was not beyond fifth grade.

Participants needed to be fluent in English and to have access to a computer connected to the internet to participate in the study. They had to identify as a female caregiver of the target child, to have legal custody of the child at least 50% of the time, and to have taken care of the child for at least five years. They did not have to be the child’s biological mother. Participants whose target child had a significant sensory impairment, physical impairment, psychiatric disorder, chronic illness, or genetic

disorder (unrelated to ASD) were ineligible to participate. Participants whose target child was primarily home-schooled or primarily resided at a residential school were also ineligible to participate.

Mothers in the ASD group were included if (a) she confirmed that a mental health, medical, or special education professional diagnosed her child with ASD; (b) she indicated that she believed her child had ASD; and (c) the child's score on the Social Communication Questionnaire (SCQ; an ASD screening tool) was above the cut-off score for ASD.

Mothers in the ADHD group were similarly included if (a) she confirmed that a mental health, medical, or special education professional diagnosed her child with ADHD; (b) she indicated that she believed her child had ADHD; and (c) the child's score on the Conners 3 ADHD Index (Conners 3AI; an ADHD screening tool) was above the cut-off score for ADHD. Additionally, mothers in the ADHD group were excluded if their child scored above the cut-off on the SCQ.²

Mothers in the Typical group were included as long as her child scored below the cut-off point for the SCQ and the Conners 3AI.

² Note that mothers in the ADHD group were excluded if their child scored above the cut-off on the SCQ, although mothers in the in the ASD were *not* excluded if their child scored above the cut-off for the Conners 3AI. It is common for children diagnosed with ASD to have ADHD-like symptoms, while the reverse is not common (Mayes, Calhoun, Mayes, & Molitoris, 2012). Similarly, in the current study, the majority of children with ASD scored above the cut-off on the Conners 3AI. In the final sample there was not a significant difference between the ASD group and the ADHD group on the Conners 3AI scores, while there was a significant difference for the SCQ scores.

A total of 304 participants registered for the study, and 180 participants were included in the final data set. Seventy-six participants were in the ASD group. There were 50 participants in the ADHD group. In the Typical group, there were 54 participants.

Of the 124 participants excluded from the final data set, 55 participants did not provide enough data to be included in analyses. Participants whose children did not meet the SCQ or Conners 3AI diagnostic criteria were excluded from analyses ($n=54$).³ Participants whose children did not meet study inclusion criteria for other reasons (e.g., significant psychiatric disorder, chronic illness; $n=5$) were also excluded from analyses. Ten participants were excluded because their children were beyond the age range or not at the appropriate grade level. See Table 1 for additional information.

Table 1
Excluded Participants by Diagnostic Category

Reason for exclusion	ASD	ADHD	Typical
Incomplete data	11	16	28
Did not meet SCQ diagnostic criteria	11	20	4
Did not meet Conners 3AI diagnostic criteria	N/A	3	16 ^a
Other diagnostic reasons	2	3	0
Age or grade beyond inclusion criteria	5	4	1

^aTwo of these 16 participants rated their child with a High Average score (T -score of 60 to 64) on the Conners 3AI. The remaining 14 participants rated their child with an Elevated score (T -score of 65 or above) on the Conners 3AI.

Demographic information for the final sample is presented in Table 2.

³ These 54 excluded participants reported either (a) that their child had ASD, but their child fell below the cut-off score on the SCQ; (b) that their child had ADHD, but their child fell above the cut-off score on the SCQ or below the cut-off score on the Conners 3AI; or (c) that their child was typically developing, but their child fell above the cut-off score on the SCQ or the Conners 3AI.

Table 2
Demographic Information of Sample

Demographic categories	Total sample	ASD	ADHD	Typical
Age of mother	39.3 (7.2)	39.5 (7.8)	39.6 (6.8)	38.6 (6.8)
Age of child	8.5 (1.6)	8.4 (1.7)	9.0 (1.4)	8.1 (1.5)
Sex of child (male)	67.0%	80.3%	70.0%	46.0%
Relationship status (married/cohabiting)	69.0%	65.8%	72.0%	72.2%
Education (some college or higher)	93.0%	85.0%	96.0%	100.0%
Massachusetts residents	43.0%	21.0%	38.0%	79.6%
Household Income:				
- 0-25,000	11.7%	18.4%	4.1%	9.3%
- 50,000	26.7%	28.9%	28.6%	22.2%
- 75,000	16.1%	11.8%	22.4%	16.7%
- 100,000	15.6%	19.7%	14.3%	11.1%
- More than 100,000	29.4%	21.1%	30.6%	40.7%
Average # of additional children in the family	1.20	1.43	0.98	1.07
Additional child with ASD	8.3 %	18.4 %	0.0%	1.9%
Additional child with ADHD	14.4%	22.4%	10.0%	7.4%
SCQ total	13.4 (10.5)	24.4 (5.2)	6.2 (4.5)	4.4 (3.0)
Conners 3AI total	9.6 (7.1)	13.6 (5.2)	13.2 (5.2)	0.65 (1.5)
Child has an I.E.P	49.4%	94.7%	28.0%	5.6%
Child has a 504 plan	7.9%	7.9%	26.0%	3.7%
Child receives other special education services	22.8%	32.9%	26.0%	5.6%
Child takes medications	53.5%	53.9%	92.0%	16.7%
Feels guilt/responsibility for not doing enough for child ^a				
- Daily	23.6%	36.0%	22.0%	7.5%
- Weekly	24.2%	24.0%	20.0%	28.3%
- Monthly	16.9%	14.7%	20.0%	17.0%
- Less than monthly	12.4%	10.7%	12.0%	15.1%
- Never	23.0%	14.7%	26.0%	32.1%
Heard about study from:				
- Parent support group	56.1%	73.7%	66.0%	22.2%
- UMB e-mail/flyer	18.9%	0.0%	18.0%	46.3%
- E-mail/internet (unspecified)	10.0%	11.8%	6.0%	11.1%
- Other or no response	15.0%	14.4%	10.0%	20.4%

^a According to a chi-square analysis, there was a significant relationship between maternal feelings of guilt and diagnostic group (Pearson Chi-Square=16.82, $p=.032$).

Racial group information for the final sample is presented in Table 3. For the total sample, this study had significantly more White mother participants than the U.S. population (which is 74.2%) and significantly fewer mother participants from the other racial groups (U.S. Census Bureau, 2010), according to One-Sample T-Test analyses. This difference from the U.S. racial demographics was most pronounced for the participants from the ADHD group. The Typical Group, however, appeared to be largely representative of U.S. demographics regarding racial identification, as One-Sample T-tests showed the Typical group's racial percentiles were not significantly different from the U.S. population (U.S. Census Bureau, 2010) for each of the racial categories.⁴

Table 3
Racial Group Breakdown of Sample

Racial group		Total sample	ASD	ADHD	Typical
Asian	Mother	4.4%	5.3%	4.0%	3.7%
	Child	4.4%	5.3%	2.0%	5.6%
Black/ African American	Mother	7.8%	6.6%	4.0%	13.0%
	Child	10.6%	9.2%	8.0%	14.8%
Latino(a)/ Hispanic	Mother	8.3%	10.5%	4.0%	9.3%
	Child	10.0%	11.8%	6.0%	11.1%
Native American/ Alaskan Native	Mother	0.6%	1.3%	0.0%	0.0%
	Child	1.7%	3.9%	0.0%	0.0%
Pacific Islander/ Native Hawaiian	Mother	0.6%	0.0%	0.0%	1.9%
	Child	1.1%	0.0%	0.0%	3.7%
White	Mother	81.7%	78.9%	94.0%	74.1%
	Child	78.9%	76.3%	88.0%	74.1%
Multiracial	Mother	1.1%	0.0%	4.0%	0.0%
	Child	6.7%	2.6%	10.0%	9.3%
Other	Mother	1.7%	0.0%	4.0%	1.9%
	Child	3.9%	1.3%	6.0%	5.6%

⁴ Exceptions to this are the Native American/Alaskan Native and Multiracial categories of which there were no identifying mother participants from the Typical group.

Mothers from the ASD group and the ADHD group were asked about their confidence level regarding their child’s diagnosis (see Table 4). For both the ASD group and the ADHD group, about three-quarters of participants were extremely confident in their child’s diagnosis. Participants from all three groups were asked about their beliefs regarding ASD and ADHD (i.e., (a) whether the participant thinks *others* believe the disorder is overdiagnosed, (b) whether *the participant* believes the disorder is overdiagnosed, and (c) the extent to which the disorder is biologically-based). See Table 5.

Table 4
Confidence Regarding ASD or ADHD

Question	Responses	ASD	ADHD
How confident are you in your child’s diagnosis? ^a	<i>Extremely confident</i>	73.7%	75.5%
	<i>Mostly confident</i>	15.8%	22.4%
	<i>Somewhat confident</i>	10.5%	2.0%

^a Participants were also given the following response options: (a) A little confident and (b) Not confident at all. There were no included participants who endorsed these responses.

Table 5
Beliefs Regarding ASD and ADHD

Questions	Responses	Total sample	ASD	ADHD	Typical
Do you think that <i>most people</i> believe that ASD is overdiagnosed in the U.S.?	<i>Yes</i>	43.3%	58.7%	32.0%	32.1%
	<i>No</i>	33.1%	25.3%	42.0%	35.8%
	<i>Unsure</i>	23.6%	16.0%	26.0%	32.1%
Do <i>you</i> believe that ASD is overdiagnosed in the U.S.?	<i>Yes</i>	16.3%	16.0%	8.0%	24.5%
	<i>No</i>	61.2%	73.3%	66.0%	39.6%
	<i>Unsure</i>	22.5%	10.7%	26.0%	35.8%
To what extent do you think ASD is a biologically-based disorder? ^a		3.65 ^b	3.69	3.78	3.47
Do you think that <i>most people</i> believe that ADHD is overdiagnosed in the U.S.?	<i>Yes</i>	74.2%	73.3%	90.0%	60.4%
	<i>No</i>	8.4%	9.3%	4.0%	11.3%
	<i>Unsure</i>	17.4%	17.3%	6.0%	28.3%
Do <i>you</i> believe that ADHD is overdiagnosed in the U.S.?	<i>Yes</i>	41.6%	34.7%	28.0%	64.2%
	<i>No</i>	39.9%	53.3%	44.0%	17.0%
	<i>Unsure</i>	18.5%	12.0%	28.0%	18.9%
To what extent do you think ADHD is a biologically-based disorder? ^a		3.58 ^c	3.58	4.06	3.13

^a This question was assessed on a 5-point scale (1=No biological basis; 5=Completely biologically-based).

^b Diagnostic group differences were not significant.

^c Diagnostic group differences were significant among all groups (F -value=17.07, p <.001).

Procedure

The institutional review board (IRB) at University of Massachusetts Boston (UMB) approved this research protocol. Participants were recruited through various national and local support groups or advocacy organizations for ASD or ADHD (e.g., Autism Speaks, CHADD [Children and Adults with Attention-Deficit/Hyperactivity Disorder]); parent advocacy organizations (e.g., National Association of Mother Centers); parent-focused websites or blogs (e.g., local yahoo.com groups); flyers in organizations that serve children with developmental disabilities (e.g., Spotlight program), in public/community spaces (e.g., libraries), and in stores/shops (e.g., coffee shops); a study-specific Facebook page; parent group meetings (e.g., PTA/PTO); and the

University of Massachusetts Boston (e.g., university e-mail, campus flyers). For each potential recruitment website/agency, the principle investigator obtained permission to recruit participants from the website/agency's moderator or governing body. Participant recruitment and data collection occurred between January 2012 and September of 2012.

Potential participants were provided with basic information about the goals of the study via recruitment materials. Interested participants were directed to a secure electronic website through the PsychData web source. For participants, this study was titled *Mothers' Experiences of Parenting: Yourself, Others, and Your Child*. Participants were informed that the questionnaire would take approximately 40-45 minutes to complete. On the study's website, participants were provided with the informed consent form to read. Following informed consent, participants were presented with the questionnaire.

At the end of the study, participants were provided with an opportunity to enter a raffle for the chance to win one of three \$100 gift cards. Participants who opted-in to the raffle were asked to provide their name and e-mail address or phone number, which was stored in a file separate and un-linked to the other collected data. Thus, participants' data were not linked to their identifying information.

The three participants who won the raffle prize were contacted by the principle investigator in order for the \$100 gift card to be mailed to them. When those three participants had been awarded their prize, the principle investigator contacted the other participants who had provided their contact information to notify them that the drawing had been completed, that they were not selected, and thanking them for participating.

The principle investigator also offered these remaining participants the opportunity to receive a synopsis of the study results.

Measures

The questionnaire consisted of a range of 191 to 213 questions (dependent on group). Although the estimated completion time for the questionnaire was 40-45 minutes, more than half of the participants completed the questionnaire in 30 minutes or less. The following measures were included in the questionnaire, in the order presented below. See Appendix A for a reproduction of the questionnaire, excluding the measures that are copyright protected.

Diagnostic group allocation. Participants responded to questions identifying their diagnostic group affiliation (ASD group, ADHD group, or Typical group) for the purpose of this study (i.e., whether or not they had a child with ASD and/or ADHD within the inclusive age/grade range).

Inclusion/exclusion criteria. Participants were asked questions to determine whether the mother and child met inclusion criteria. These questions included the age of the child, the mother's relationship to her child, the schooling environment for the child, and whether the child met the study's diagnostic criteria for ASD or ADHD and did not meet any of the diagnostic exclusionary criteria.

Demographic questions. Participants were asked to provide demographic descriptive information about themselves and their children. Questions included the age of the mother, the mother's relationship status, household income, financial situation,

mother's highest educational degree, mother's and child's race and ethnicity, child's gender, and information about other children.

Service receipt questions. Participants were asked to provide information about services that their child received, such as medications and special education services (within and outside of school). Questions regarding special education services were adapted from Blacher and Eisenhower (2011). Service receipt questions were used to describe the sample, but were not used to systematically evaluate the mothers' experiences.

The Parenting Sense of Competence Scale (Johnston & Mash, 1989). The Parenting Sense of Competence Scale (PSOC) is a self-report measure of a parent's sense of competence. It is commonly used to assess maternal self-efficacy among parents of school-aged children. This scale consists of 17 items, assessed on a likert scale of 1-6 (1=strongly disagree; 6=strongly agree). According to Johnston and Mash (1989), the scale loads onto two factors: (1) Parental Efficacy and (2) Parental Satisfaction; however, other authors have replicated factor analyses for this scale, and have found variations in factor breakdown (Gilmore & Cuskelly, 2008; Ohan et al., 2000; Rogers & Matthews, 2004). Additionally, Johnston and Mash's two-factor delineation has limitations, being that all items on the Parental Efficacy scale are worded positively, while the items on the Parental Satisfaction are worded negatively; this has been identified as a problem by other researchers who work with this scale (Ohan et al., 2000). Given that the factor structure for this scale has been inconsistent, this study used the entire 17-item total score to estimate *maternal self-efficacy* for these analyses. Items that were worded negatively

were reverse coded, and higher total scores indicated a higher sense of maternal self-efficacy. According to Johnston and Mash, Cronbach's alpha for the PSOC total score was .79. Within the current study, the Cronbach's alpha was equal to .86.

Perceived Stigma Scale – Revised (based on Mickelson, Wroble, & Helgeson, 1999). The Perceived Stigma Scale is a self-report measure, adapted from other measures of perceived stigma (Crandall, 1991; Levinson & Starling, 1981). Mickelson's Perceived Stigma Scale contains eight items, assessed on a 5-point likert scale (1=Definitely False; 3=Neither; 5=Definitely True). The eight items have been found to have an internal consistency coefficient of .76 and test-retest reliability of .78 (Mickelson, 2001).

The Perceived Stigma Scale used for the current study was adapted from Mickelson et al. (1999), which assessed perceived stigma among parents of children with special needs. According to K. Mickelson (personal communication, January 7, 2011), the scale has been used with a variety of different populations by changing the wording to match the stigma with which that specific population deals. The current study re-worded the items so that the stigma reaction being measured was in response to the child's inappropriate/disruptive behaviors. The scale was administered three times in the current study, to assess parenting-related perceived stigma in three different contexts: (a) in the public sphere, (b) in the school environment, and (c) among family members, yielding 24 items in total. Items that were worded negatively were reverse coded, and higher total scores indicated a higher level of parenting-related perceived stigma. The Cronbach's alpha value for the total score was .94, with the following Cronbach's alpha scores for

each of the three subscales: public sphere ($\alpha=.86$), school environment ($\alpha=.89$), and family members ($\alpha=.88$). The total score from these 24 questions was used to calculate *perceived stigma* for analyses.

Child Behavior Checklist for Ages 6-18 (Achenbach & Rescorla, 2001). The Child Behavior Checklist (CBCL) is a questionnaire designed to provide information about different types of challenging childhood behaviors. The current study used questions from the Aggressive Behavior subscale of the CBCL to account for *child problem behaviors*. The Aggressive Behavior subscale consists of 18 questions, which are assessed on a three-point likert scale (0=Not True; 1=Somewhat or Sometimes True; 2=Very True or Often True). The test-retest reliability (r) for the Aggressive Behavior subscale equaled .90 (Achenbach & Rescorla, 2001). In the current study, the Cronbach's alpha was .91.

Social Provision Scale – Short (Russell & Cutrona, 1984). The Social Provision Scale is a self-report measure of social support, aimed at assessing the level of provisions one receives from social relationships, based on the theory of Weiss (1974). According to Weiss, there are six categories of provisions that individuals receive from social relationships: (1) guidance (advice or information), (2) reliable alliance (assurance that others can be counted on during times of stress), (3) reassurance of worth (recognition of one's competence), (4) attachment (emotional closeness), (5) social integration (a sense of belonging to a group of friends), and (6) opportunity for nurturance (providing assistance to others). The Social Provision Scale Short includes questions from five of these domains (all except for nurturance), and provides a global

social support score. It was designed to gather information about one's social relationships with friends, family members, co-workers, and community members. The scale consists of 10 items, assessed on a likert scale of 1-4 (1=Strongly Disagree; 4=Strongly Agree). Coefficient alpha estimates of reliability for the 10-item Short version equaled .83 (D. Russell, personal communication, October 22, 2013), suggesting adequate psychometric properties. The Cronbach's alpha for the current study equaled .90. The Social Provision Scale score was used to assess *social support* for this study.

Social Communication Questionnaire, Current Form (Rutter, Bailey, Lord, & Pickles, 2003). The SCQ is a questionnaire that assesses communication skills and social functioning among children who may have ASD. The SCQ, Current Form contains items about social and communication behaviors over the most recent three-month period, and consists of 40 yes-or-no questions. The presence of an abnormal behavior is given the score of 1; the absence of an abnormal behavior is given the score of 0. The resulting sum yields a total score, which is compared to a cut-off for the presence of ASD (suggested by Rutter et al. to be 15).

According to Corsello et al. (2007), the sensitivity of the SCQ ranges from .45 to .77, and the specificity ranges from .71 to .84. Corsello et al. also reported a strong and significant correlation (.73, $p < .001$) between the SCQ total score and the Autism Diagnostic Interview – Revised total score; this suggests that the SCQ is a valid screener for ASD and is a good indicator of ASD symptom severity. The alpha reliability coefficient for the Autism Screening Questionnaire (an older version of the SCQ) was found to be .90 (Berument, 1999), suggesting strong internal reliability. In the current

study, the SCQ's Chronbach's alpha was .95. The SCQ was used to determine inclusion/exclusion of all participants. For participants in the ASD group, they were included if the SCQ score was 15 or greater. Participants in the ADHD group and the Typical group were excluded if the SCQ score was 15 or greater.

Conners 3 ADHD Index – Parent (Conners, 2008). The Conners 3AI is a screening instrument to assess for ADHD. It contains 10 items from the longer Conners 3rd Edition that best differentiate youth with ADHD from youth in the general population, and is assessed on a four-point likert scale (0=Not true at all; 1=Just a little true; 2=Pretty much true; 3=Very much true). Conners (2008) reported that the internal consistency Chronbach's alpha for the Conners 3AI – Parent was .90. The Test-Retest reliability estimate was .93 and the Inter-Rater reliability estimate was .85. The Conners 3AI also has shown adequate consistency across informants (parent to teacher $r=.61$; parent to youth $r=.57$; $p<.001$). Convergent validity estimates for the Conners 3AI – Parent were also strong (with BRIEF Metacognition Index, $r=.80$, $p<.01$). Discriminative Validity estimates for the Conners 3AI – Parent was estimated to be 86%. In the current study, the Cronbach's alpha for the Conners 3AI was .93.

The Conners 3AI score was used to determine inclusion/exclusion for mothers from the ADHD group and mothers from the Typical group. According to Conners (2008), a *T*-score of 60 to 64 is a High Average score, and indicates slightly more concerns than typical. A *T*-score of 65 or above is Elevated, and represents more than typical concerns. For participants from the ADHD group, they were excluded if the

Conners' *T*-score was less than 65. Participants from the Typical group were excluded if the Conners' *T*-score was 60 or above.

Parenting Stress Index, Short Form (Abidin, 1995). The Parenting Stress Index (PSI) was designed to assess parenting related stress among parents who have children 12-years-old and younger. The PSI, Short Form contains 36 items, generally assessed on a 5-point likert scale (1=Strongly Agree; 5=Strongly Disagree). The PSI yields a Total Stress score from three scales: Parental Distress, Parent-Child Dysfunctional Interaction, and Difficult Child. The internal consistency coefficient alpha scores for the PSI have been found to range from .80 to .91 (Abidin, 1995). The total stress score for the short form has also yielded a high correlation with the total stress score for the full length PSI ($r=.94$; Abidin, 1995). This suggests adequate psychometric properties for the PSI. In the current study, the Cronbach's Alpha score was high at .95. The PSI, Short Form total stress score was used to calculate *maternal stress* for analyses in the current study.

Beliefs Regarding ASD and ADHD. Participants were asked questions about their beliefs and what they think others' beliefs are regarding ASD and ADHD. Mothers of children with ASD and mothers of children with ADHD were also asked about their level of confidence in their child's diagnosis. These questions were used to describe the sample, but were not used to systematically evaluate the mothers' experiences.

Maternal Guilt questionnaire (Kuhn & Carter, 2006). The Maternal Guilt questionnaire is a self-report measure, designed to assess whether a mother experiences guilt about not doing enough for her child, and the frequency with which these feelings

occur. This scale consists of two questions. It was developed for assessment among mothers of children with ASD; for the current study the wording of the questions were revised slightly in order for the items to be applicable to mothers of children with ADHD and mothers of typically developing children. Reliability estimates are not available for this scale. These questions were used to describe the sample, but were not used to systematically evaluate the mothers' experiences.

CHAPTER 3

RESULTS

Description of the Data

Data was evaluated using IBM[®] SPSS[®] Statistics 20. The means, standard deviations, and ranges for the independent, dependent, mediator, and moderator variables within the total sample are shown in Table 6. A correlation matrix for these variables is presented in Table 7. There was no evidence of multicollinearity among these variables.

Table 6
Means, Standard Deviations, and Ranges for Independent, Dependent, Mediator, and Moderator Variables

Variable	Mean	Standard Deviation	Min.	Max.
Perceived stigma	69.14	20.46	24	118
Child problem behaviors	12.94	7.72	0	35
Maternal self-efficacy	68.69	11.91	37	93
Maternal stress	96.23	28.46	39	163
Social support	32.11	6.27	10	40

Table 7
Correlation Matrix for Independent, Dependent, Mediator, and Moderator Variables

Variable	Child problem behaviors	Maternal self-efficacy	Maternal stress	Social support
Perceived stigma	.51	-.54	.63	-.36
Child problem behaviors		-.51	.68	-.25
Maternal self-efficacy			-.70	.58
Maternal stress				-.65

All correlations were significant at $p < .01$.

Comparisons between final sample and excluded participants. In order to determine whether the final sample ($n=180$) differed significantly from the excluded participants ($n=124$), independent-samples t-tests and chi-square tests were conducted. The following descriptor variables were compared: (a) age of mother, (b) age of child, (c) sex of child, (d) diagnostic group, (e) perceived stigma, and (f) maternal self-efficacy. There was a significant difference across diagnostic groups (Pearson Chi-Square=11.52, $p=.003$). Fewer excluded participants were from the ASD group (23.4% of excluded sample) than from the ADHD group (37.1% of excluded sample) and the Typical group (39.5% of excluded sample). For the other variables, there were not significant differences between the final sample and the excluded participants.

Missing data. Missing data were examined within the final sample of 180 included participants. The amount of missing data across all study variables was never above four percent. Missing Value Analyses were conducted with all independent, dependent, mediator, and moderator variables. No missing value patterns were evident.

Because some participants skipped items on some variables, participants who had too many skipped items for a variable were excluded from analyses involving that variable.

The following criteria were used:

- For analyses with the measures for child problem behaviors, maternal self-efficacy, and social support, participants were included if they had only one missing item; a prorated averaged score of that scale was used. If participants skipped more than one item for a variable, they were excluded from analyses that involved that variable.

- For the perceived stigma and for maternal stress measures, which both consist of three subscale scores as well as a total scale score, participants with only one missing item from any or each of the three subscales were included; a prorated averaged score of that subscale was used. Participants were excluded from analyses if they had more than one item missing from any of the subscales.
- For the Conners 3AI and the SCQ, participants were included if they had only one missing item; a prorated averaged score of that scale was used. If participants skipped more than one item, they were excluded from the study. However, participants from the ASD group who skipped more than one SCQ item were included if their child still met diagnostic criteria on the SCQ.

See Table 8 for information regarding participants excluded from analyses due to missing data, and the break down by diagnostic group.

Table 8
Number of Excluded Participants Due to Missing Items

Variable	Total	ASD	ADHD	Typical
Perceived stigma	4	1	0	3
Child problem behaviors	4	3	1	0
Maternal self-efficacy	1	1	0	0
Maternal stress	5	3	1	1
Social support	0	0	0	0

Normality analyses. All independent, dependent, mediator, and moderator variables were assessed for normality and for the presence of outlier variables. For all analyzed variables (i.e., perceived stigma, child problem behaviors, maternal self-efficacy, maternal stress, and social support), normality was established. Skewness and kurtosis were not beyond ± 1 . There were no outlier data points.

Analyses for Potential Covariates

To determine whether sociodemographic variables should be included as covariates in hypothesis tests, independent-samples t-tests, chi-square tests, bivariate correlations, and ANOVA analyses were conducted. The examined sociodemographic variables included:

- Target child's age
- Target child's sex
- Mother's age
- Mother's relationship status
- Family's financial situation
- Family's household income
- Maternal education
- Number of siblings of target child
- Diagnosis of siblings (i.e., whether a sibling had ASD or ADHD)
- State of residence (i.e., Massachusetts vs. non-Massachusetts)

Analyses were conducted to determine whether these sociodemographic variables had significant relationships with the study's independent (perceived stigma and child problem behaviors), dependent (maternal self-efficacy), mediator (maternal stress), and moderator variables (social support and diagnostic group).

Maternal education and child's sex were both found to have significant relationships with others variables, and thus were included as covariates in analyses. All other sociodemographic variables did not influence other variables in ways that would warrant their inclusion as covariates. (See Appendix B for a full description of these

evaluations.) The next sections provide descriptions of covariate determination analyses for maternal education and target child’s sex.

Maternal education. Maternal education was initially analyzed at four levels: (1) high school/vocational school or less (no college); (2) some (1-3 years of) college; (3) college degree; and (4) graduate (master’s or doctoral) degree. Maternal education was found to influence five of the six independent, dependent, mediator, and moderator variables (i.e., diagnostic group, child problem behaviors, maternal self-efficacy, maternal stress, and social support) based on chi-square and ANOVA analyzes. Table 9 displays the chi-square table for diagnostic group by maternal education (Pearson Chi-Square=21.46, $p=.002$). This data suggests that there were a greater percentage of mothers from the ASD group who had not attended college than mothers from the other two diagnostic groups.

Table 9
Chi-Square Analysis for Diagnostic Group by Maternal Education

Maternal Education Level	ASD		ADHD		Typically Developing	
	Total	Percentage within group	Total	Percentage within group	Total	Percentage within group
No College	11	14.5%	2	4.0%	0	0.0%
Some College	26	34.2%	13	26.0%	10	18.5%
College Degree	19	25.0%	24	48.0%	22	40.7%
Graduate Degree	20	26.3%	11	22.0%	22	40.7%

Regarding the ANOVA analyzes, Post Hoc Tukey HSD tests showed that there were significant differences among maternal education categories for child problem behaviors ($F=5.67, p=.001$); maternal self-efficacy ($F=4.81, p=.003$); maternal stress

($F=3.39, p=.019$); and social support ($F=6.77, p<.001$). As shown in Table 10, these post-hoc analyses indicated that scores for participants within the No College category frequently differed from scores for participants within the other educational categories. There were fewer significant differences in participants' scores among the other educational categories.

Table 10
Post-Hoc Tukey HSD Multiple Comparisons Results of Significant Differences Between Maternal Education Categories

Maternal Education Level	Some College	College Degree	Graduate Degree
No College	None	Maternal self-efficacy** Maternal stress* Social support**	Maternal self-efficacy** Maternal stress* Social support***
Some College		Child problem behaviors**	Child problem behaviors** Social Support**
College Degree			None

* Significant at $p<0.05$

** Significant at $p<0.01$

*** Significant at $p<0.001$

Tukey HSD Homogeneous Subsets analyses showed that between the Some College, College Degree, and Graduate Degree categories there were not significant differences for the study's measures (i.e., child problem behaviors, maternal self-efficacy, maternal stress, and social support). The No College and Some College categories did not differ significantly for the child problem behaviors and the maternal stress measures.

These post-hoc analyses indicated that participants within the No College category differed from participants in the other education groups on many of the study's measures. On average, participants in the No College category reported significantly (a) more child problem behaviors, (b) lower maternal self-efficacy, (c) higher maternal

stress, and (d) lower social support. For the proposed analyses the maternal education variable was converted into a dichotomous variable with two categories: (1) No College and (2) Some College or Above. This dichotomous variable was used as a covariate for analyses involving child problem behaviors, maternal self-efficacy, maternal stress, and social support.

Target child’s sex. Differences within the perceived stigma ($t=2.72, p=.007$) child problem behaviors ($t=2.45, p=.015$) and maternal stress ($t=2.13, p=.035$) variables were related to the target child’s sex, according to independent-samples t-test analyses. Mothers of male target children had higher scores for both of these scales. Target child’s sex was also related to diagnostic group, according to chi-square analysis (Pearson Chi-Square=16.77, $p<.001$; see Table 11).

Table 11
Chi-Square Analysis for Diagnostic Group by Target Child’s Sex

Gender	ASD		ADHD		Typically Developing	
	Total	Percentage within group	Total	Percentage within group	Total	Percentage within group
Male	61	80.3%	35	70.0%	25	46.3%
Female	15	19.7%	15	30.0%	29	53.7%

There appeared to be a greater percentage of male target children in the ASD group and the ADHD group, compared to the Typical group. Such a breakdown of sex differences within the diagnostic categories is not surprising, given documented gender prevalence differences for ASD and ADHD (Centers for Disease Control and Prevention, 2012; Pastor & Reuben, 2008). Target child’s sex did not significantly influence the dependent variable (maternal self-efficacy) or the social support variable. Therefore, it

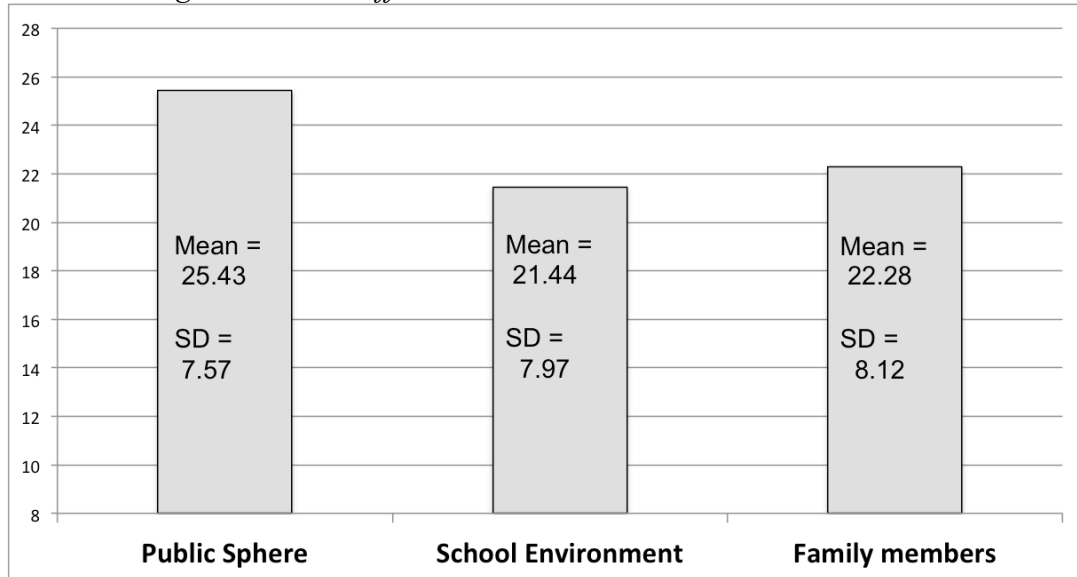
was decided to use target child's sex as a covariate for analyses that included perceived stigma, child problem behaviors and maternal stress, but not for other analyses.⁵

Hypothesis Driven and Exploratory Analyses

Aim 1, exploratory analysis 1. The aim of the first exploratory analysis was to assess whether reports of perceived stigma differed according to context. Perceived stigma scores across three different contexts (public sphere, school environment, and family members) were examined. Level of perceived stigma did not vary according to context, as the repeated measure ANCOVA was not significant ($F=1.03$, *partial eta*²=.006, $p=.35$). See Figure 2 for a display of means and standard deviations for this analysis.

⁵ For the child problem behaviors measure (the CBCL), the test's authors (Achenbach & Rescorla, 2001) provide *T*-scores based on child's sex, which suggests an acknowledgement that this measure yields different results for boys and girls. Since Achenbach and Rescorla recommend that researchers use raw scores rather than *T*-scores for data analysis, "in order to take account of the full range of variation in these scales" (p. 176), this is the procedure that was followed for the current study.

Figure 2
Perceived Stigma Context Differences



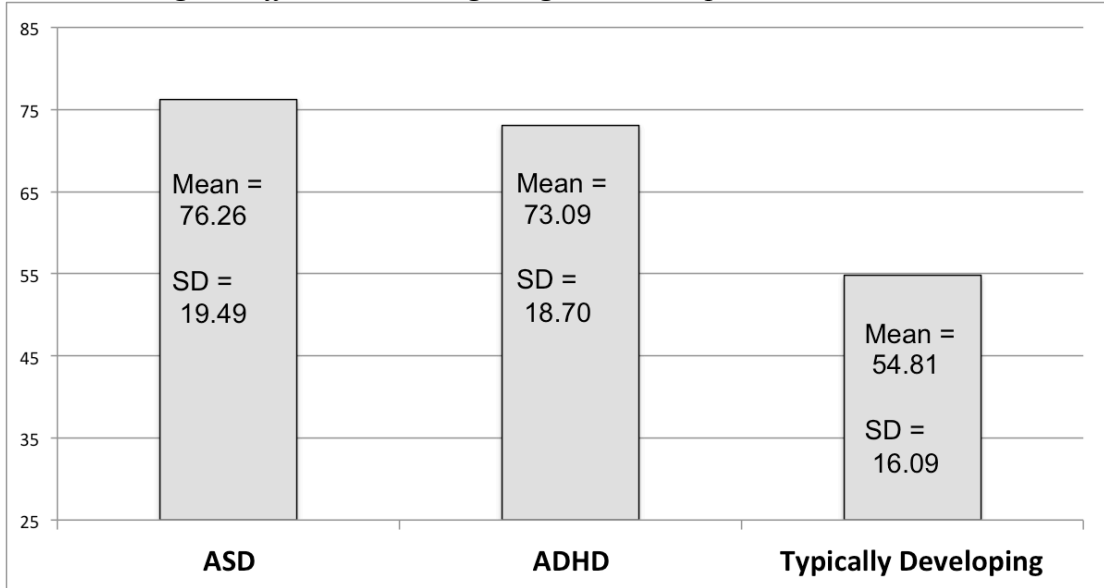
Aim 1, hypothesis 1. It was hypothesized that mothers of children with ASD and mothers of children with ADHD would report higher levels of perceived stigma (total score) than mothers of typically developing children. No group differences in reported level of perceived stigma between mothers of children with ASD and mothers of children with ADHD were expected. A One-Way ANCOVA design was used to assess this question.⁶

This hypothesis was supported, as the One-Way ANCOVA model was significant ($F=15.33, p<.001; partial \eta^2=.18, p<.001$). Mothers in the ASD group and mothers in the ADHD group reported significantly higher levels of perceived stigma than mothers in

⁶ Because the addition of a covariate in a One-Way ANOVA design prevents SPSS from reporting post-hoc tests, for this analysis (and for subsequent One-Way ANCOVA analyses) the F -score, $partial \eta^2$, and significance values will be reported from ANCOVA analyses with the appropriate covariates; post-hoc test results will be reported based on ANOVA analyses without covariates.

the Typical group, based on Post Hoc Tukey HSD tests ($p < .001$). There was not a significant difference between mothers of children with ASD and mothers of children with ADHD regarding perceived stigma level. See Figure 3 for a display of means and standard deviations for this data.

Figure 3
Perceived Stigma Differences Among Diagnostic Groups

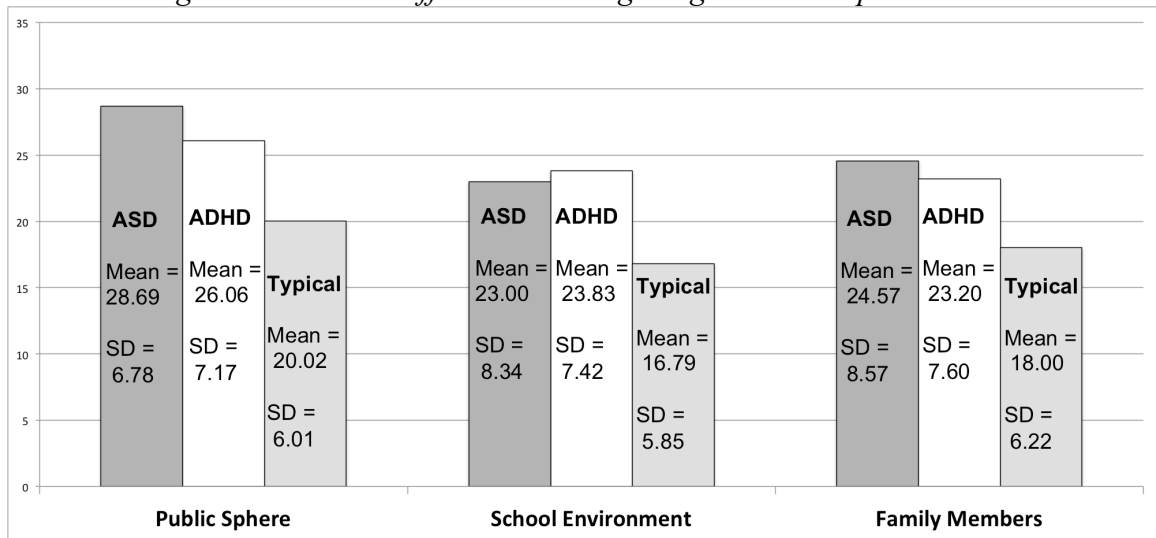


Post-hoc, it was decided to examine how child problem behaviors might be impacting perceived stigma group differences. Another One-Way ANCOVA was conducted with child problem behaviors added as a covariate. According to this analysis, when controlling for child problem behaviors, the significant difference remained among the diagnostic groups ($partial\ eta^2 = .045, p = .021$). This suggests that diagnostic group had an effect above and beyond child problem behaviors.

Aim 1, post-hoc analyses. A mixed design ANCOVA was used to assess whether there was an interaction between context and diagnostic group. The interaction effect between diagnostic group and context of perceived stigma was significant ($F = 3.18,$

*partial eta*² = .036, *p* = .017). Because of this significant interaction, it was determined that further exploration would be appropriate to examine (a) group differences within the three context areas of perceived stigma and (b) perceived stigma contextual differences within each diagnostic group. See Figure 4 for a display of means and standard deviations.

Figure 4
Perceived Stigma Contextual Differences Among Diagnostic Groups



Examination of diagnostic group differences within each perceived stigma

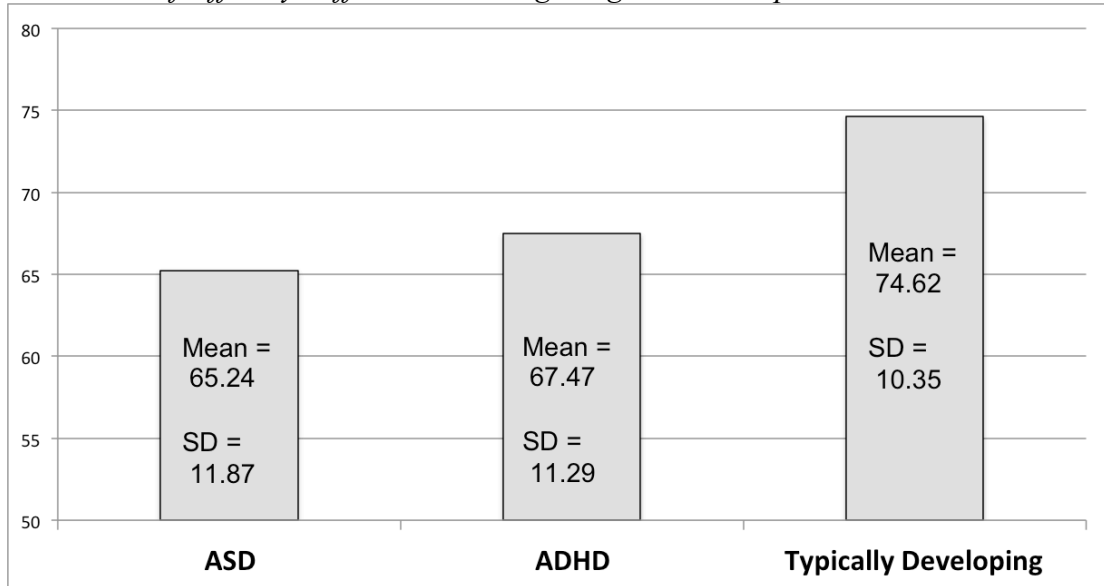
context. One-Way ANCOVA analyses were conducted for each of the three context areas (i.e., public sphere, school environment, and family members). Mothers of children with ASD and mothers of children with ADHD reported significantly higher levels of perceived stigma compared to mothers of typically developing children within all three contexts (*p* < .001). There was not a significant difference between mothers of children with ASD and mothers of children with ADHD, although within the public sphere only the significance level approached significance (*p* = .082). The model values are as

follows: (a) public sphere ($F=17.16, p<.001; \text{partial } \eta^2=.22, p<.001$); (b) school environment ($F=11.09, p<.001; \text{partial } \eta^2=.11, p<.001$); and (c) family members ($F=8.00, p<.001; \text{partial } \eta^2=.10, p<.001$).

Examination of perceived stigma context differences within each diagnostic group. Repeated measure ANCOVA analyses were conducted within diagnosis-specific datasets (i.e., ASD group, ADHD group, and Typical group). Within each diagnosis-specific dataset, there were not significant differences among the three perceived stigma context areas.

Aim 2, exploratory analysis 1. This exploratory analysis examined whether there were diagnostic group differences regarding reported level of maternal self-efficacy. A One-Way ANCOVA design was used to assess this question and the model was significant ($F=9.60, p<.001; \text{partial } \eta^2=.093, p<.001$). Based on Post Hoc Tukey HSD tests, mothers from the ASD group ($p<.001$) and mothers from the ADHD group ($p=.004$) both reported significantly lower levels of maternal self-efficacy than mothers from the Typical group. There was not a significant difference between mothers of children with ASD and mothers of children with ADHD regarding perceived maternal self-efficacy level. See Figure 5 for a display of means and standard deviations for this analysis.

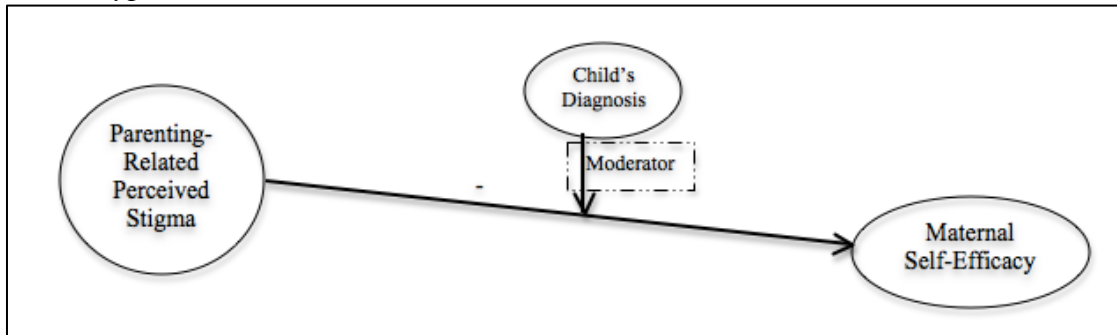
Figure 5
Maternal Self-Efficacy Differences Among Diagnostic Groups



Post-hoc, another One-Way ANCOVA was conducted, with child problem behaviors added as a covariate in order to examine how child problem behaviors might be impacting group differences. According to this analysis, when controlling for child problem behaviors, diagnostic group was no longer a significant factor accounting for maternal self-efficacy differences. This suggests that the diagnostic group differences in maternal self-efficacy are largely accounted for by child problem behaviors.

Aim 3, hypothesis 1. It was hypothesized that perceived stigma would be associated with maternal self-efficacy with a negative relationship, and that the relationship would be moderated by the child's diagnostic status. See Figure 6.

Figure 6
Aim 3, Hypothesis 1



Hierarchical regression was used to examine this hypothesis. First, child's diagnostic status was dummy coded into two variables: (1) ASD/no ASD and (2) ADHD/no ADHD. Then, the appropriate covariates were entered as a first step. Although not part of the original model, child problem behaviors was added as a covariate. This was done to control for changes in maternal self-efficacy that were related to a mother's perception of her child's behavior problems, rather than her experiences of perceived stigma. For the second step, perceived stigma (centered) and diagnostic group (dummy codes) were entered. For the third step, cross products between perceived stigma (centered) and diagnostic group (dummy codes) were entered. The regression analysis predicted to maternal self-efficacy.

Part of this hypothesis was supported, as perceived stigma retained its negative relationship with maternal self-efficacy in the final step of this regression. Child's diagnostic status was not a significant moderator. Table 12 presents a summary of the hierarchical regression.

Table 12
Perceived Stigma Predicting to Maternal Self-Efficacy

			Beta weights	t values	p value
Maternal Self-Efficacy	Step 1	Adjusted R ² = 0.289 F = 35.51***	Maternal education .18	2.74	.007
			Child problem behaviors -.49	7.56	<.001
Maternal Self-Efficacy	Step 2	R ² Change = 0.085 F = 21.33***	Maternal education .13	2.14	.034
			Child problem behaviors -.32	-4.16	<.001
			Child has ASD -.005	-0.72	.94
			Child is typical -.033	-0.40	.69
			Perceived stigma -.37	-5.03	<.001
Maternal Self-Efficacy	Step 3	R ² Change = -0.005 F = 15.21***	Maternal education .13	2.05	.042
			Child problem behaviors -.33	-4.20	<.001
			Child has ASD .005	0.061	.95
			Child is typical -.005	-0.058	.95
			Perceived Stigma -.36	-2.81	.006
			Perceived Stigma X Child has ASD -.041	-0.41	.69
		Perceived Stigma X Child is Typical .041	0.40	.69	

*** Correlation is significant at $p < 0.001$

Aim 3, hypothesis 2 and hypothesis 3. The analyses required for aim 3 hypotheses 2 and 3 are similar, and so will be described together. Both hypotheses proposed that maternal stress would mediate the relationship between child problem behaviors and maternal self-efficacy, and that this relationship would be moderated by another variable (social support for hypothesis 2; child’s diagnosis for hypothesis 3). Thus, these hypotheses postulated that there would be mediation and moderation occurring simultaneously among these variables.

In order to streamline the rest of this section, variables will be discussed using their abbreviated terms. Child problem behaviors is the independent variable (X); maternal self-efficacy is the dependent variable (Y); maternal stress is the proposed

mediator (M); and either social support or child's diagnosis are the proposed moderators (Z).

According to Muller, Judd, & Yzerbyt (2005), when mediation and moderation occur simultaneously there can either be mediated-moderation or moderated-mediation, which are subtly different processes and can be assessed using three regression analyses. Mediated-moderation is defined by Muller et al. as when “the mediating process is responsible for the moderation” (p. 853). In other words, there is overall moderation of the relationship between X and Y , and at each level of the moderator there is mediation. In describing moderated-mediation, Muller et al. state, “what varies as a function of the moderation is not the magnitude of the overall treatment effect on the outcome, but the mediating process that produces it” (p. 854). For moderated-mediation, the strength of the mediator (or whether a mediator has an effect at all) is dependent on the moderator variable. Further, there is not overall moderation of the relationship between X and Y .

The three regression analyses suggested by Muller et al. (2005) to test mediated-moderation or moderated-mediation are presented below:

$$Y = i + c_1X + c_2Z + c_3XZ + e \quad (1)$$

$$M = i + a_1X + a_2Z + a_3XZ + e \quad (2)$$

$$Y = i + c'_1X + c'_2Z + c'_3XZ + b_1M + b_2MZ + e \quad (3)$$

Equation 1 tests for moderation of the relationship between X and Y . Equation 2 assesses for moderation of the relationship between X and M . Equation 3 is a combination of these equations, “in which both the mediator's (partial) effect on the outcome and the residual effect of the treatment on the outcome, controlling for the mediator, are allowed

to be moderated” (Muller et al., 2005, p. 855). The criteria for identifying mediated-moderation and moderated-mediation, as defined by Muller et al., are presented in Table 13. For all analyses, variables X , Y , M , and Z were centered. For Hypothesis 3, child’s diagnosis was dummy coded into two variables: (1) ASD/not ASD and (2) Typically Developing/not Typically Developing.

Table 13

Mediated-Moderation and Moderation-Mediation Criteria

Mediated-Moderation	Moderated-Mediation
<ul style="list-style-type: none"> • Overall moderation (c_3 is significant) • Either (a) a_3 and b_1 are significant or (b) a_1 and b_2 are significant • There is a significant reduction in c'_3, compared to c_3. 	<ul style="list-style-type: none"> • No overall moderation (c_3 is not significant) • There is an overall treatment effect in Equation 1 (c_1 is significant) • Either (a) a_3 and b_1 are significant or (b) a_1 and b_2 are significant

Means and standard deviations for X, M, and Z. Table 14 displays the means and standard deviations for child problem behaviors (X), maternal stress (M), and social support (Z). Means and standard deviations for maternal self-efficacy (Y) are presented in the aim 2, exploration 1 section.

Table 14

Means and Standard Deviations for X, M, and Z by Diagnostic Group

Variable	ASD	ADHD	Typical
Child problem behaviors (X) ^a	16.10 (7.48)	15.17 (6.43)	6.63 (4.93)
Maternal stress (M) ^b	115.09 (24.58)	94.28 (21.82)	72.08 (18.33)
Social Support (Z) ^c	29.09 (6.63)	34.06 (5.94)	34.56 (3.90)

^aFor child problem behaviors, there was not a significant difference between the ASD and ADHD groups. The Typical group differed significantly from the other two groups ($p < .001$).

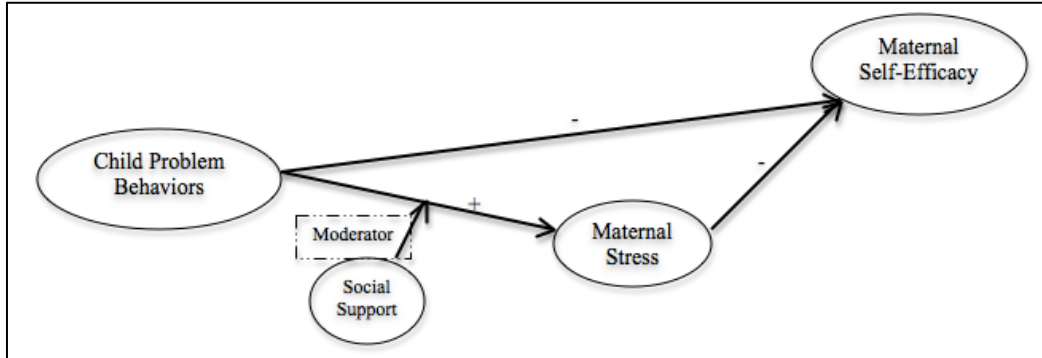
^bFor maternal stress, there were significant differences among all three groups ($p < .001$).

^cFor social support, there was not a significant difference between the ADHD and Typical groups. The ASD group differed significantly from the other two groups ($p < .001$).

Aim 3, hypothesis 2. It was hypothesized that child problem behaviors (X) would be negatively related to maternal self-efficacy (Y), and that this relationship would be

mediated by maternal stress (M) and moderated by social support (Z) in order to support a mediated-moderation model or a moderated-mediation model. See Figure 7.

Figure 7
Aim 3, Hypothesis 2



Testing for overall moderation ($Y = i + c_1X + c_2Z + c_3XZ + e$). The first analysis examined whether social support was a moderator for the negative relationship between child problem behaviors and maternal self-efficacy. If there was overall moderation (the interaction effect [c_3] being significant), then mediated-moderation would be possible; if there was not overall moderation, but there was an overall treatment effect (child problem behaviors [c_1] being significant), then moderated-mediation would be possible.

See Table 15 for results of this regression analysis. Child problem behaviors (c_1) significantly predicted to maternal self-efficacy; the interaction effect (c_3) was not significant. This indicated that moderated-mediation might be possible, and mediated-moderation was ruled-out. Although not hypothesized, social support also was an independent predictor of maternal self-efficacy.

Table 15

Aim 3, Hypothesis 2, Regression 1: Testing for Overall Moderation

		Beta weights	t values	p-value	
Maternal Self-efficacy	Adjusted R ² = 0.459 F = 29.81***	Maternal education	.086	1.48	.14
		Child's sex	-.025	0.42	.67
		Child problem behaviors	-.39	-6.57	<.001
		Social support	.45	7.37	<.001
		Child Problem Behaviors X Social Support	-.035	-0.60	.55

Testing moderation of the proposed mediator (M = i + a₁X + a₂Z + a₃XZ + e).

The second analysis examined whether social support was a moderator for the positive relationship between child problem behaviors and maternal stress (the hypothesized mediator). If either child problem behaviors (a_1) or the interaction variable of Child Problem Behaviors X Social Support (a_3) were significant predictors, then moderated-mediation would be possible.

Within this second regression analysis, child problem behaviors (a_1) was a significant predictor of maternal stress. The interaction effect (a_3) was not significant. Because a_1 was significant, this indicated that moderated-mediation might be possible. Similar to the previous regression analysis, although not hypothesized, social support was an independent predictor of maternal stress. See Table 16 for regression analysis details.

Table 16

Aim 3, Hypothesis 2, Regression 2: Testing Moderation of the Proposed Mediator

		Beta weights	t values	p-value	
Maternal Stress	Adjusted R ² = 0.709 F = 83.97***	Maternal education	.024	-0.57	.57
		Child's sex	-.046	-1.08	.28
		Child problem behaviors	.54	12.40	<.001
		Social support	-.52	-11.75	<.001
		Child Problem Behaviors X Social Support	-.072	1.70	.09

Combination of equations ($Y = i + c'_1X + c'_2Z + c'_3XZ + b_1M + b_2MZ + e$).

Lastly, the third analysis assessed for moderation of the proposed mediated relationship. Because child problem behaviors (a_1) was significant in the second analysis, the interaction of Maternal Stress X Social Support (b_2) would need to be significant within this analysis in order to demonstrate moderated-mediation.

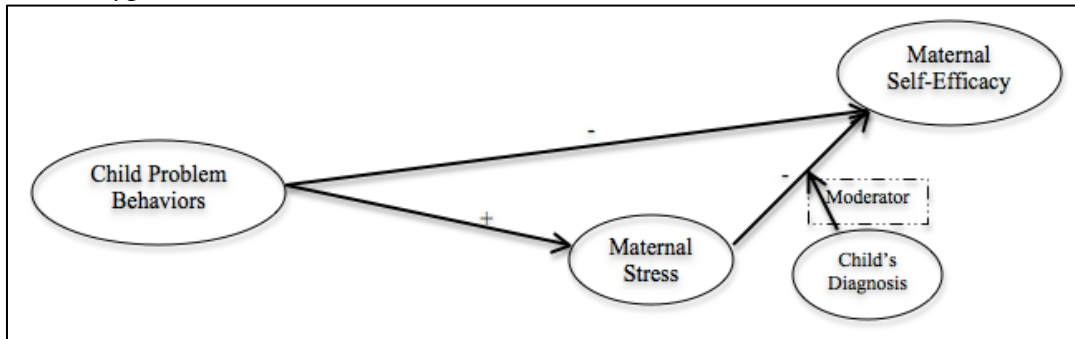
Table 17 presents results for this final regression analysis. The interaction effect (b_2) was not significant. Thus, moderated-mediation was not supported. Although the proposed hypothesis of moderated-mediation was not supported, a portion of the model was supported, according to the first two analyses: (a) child problem behaviors had a significant negative relationship with maternal self-efficacy, (b) child problem behaviors had a significant positive relationship with maternal stress, and (c) maternal stress had a significant negative relationship with maternal self-efficacy.

Table 17
Aim 3, Hypothesis 2, Regression 3: Combination of Equations

		Beta weights	t values	p-value	
Maternal Self-efficacy	Adjusted R ² = 0.507 F = 25.97***	Maternal education	.078	1.37	.17
		Child's sex	.005	0.089	.93
		Child problem behaviors	-.16	-1.97	.050
		Social support	-.23	2.73	.007
		Maternal stress	-.43	-4.25	<.001
		Child Problem Behaviors X Social Support	-.004	0.59	.95
		Maternal Stress X Social Support	-.015	-0.20	.85

Aim 3, hypothesis 3. It was hypothesized that child problem behaviors (X) would be negatively related to maternal self-efficacy (Y), and that this relationship would be mediated by maternal stress (M) and moderated by child's diagnostic group (Z) in order to support a mediated-moderation model or a moderated-mediation model. See Figure 8.

Figure 8
Aim 3, Hypothesis 3



Testing for overall moderation ($Y = i + c_1X + c_2Z + c_3XZ + e$). The first analysis examined whether or not child's diagnosis was a moderator for the negative relationship between child problem behaviors and maternal self-efficacy. If there were overall moderation (c_3 being significant), then mediated-moderation would be possible; if there was not overall moderation, but there was an overall treatment effect (c_1 being significant), then moderated-mediation would be possible.

See Table 18 for results of this regression analysis. Child problem behaviors (c_1) significantly predicted maternal self-efficacy; the interaction effect (c_3) was not significant. This indicated that moderated-mediation might be possible, and mediated-moderation was ruled-out.

Table 18

Aim 3, Hypothesis 3, Regression 1: Testing for Overall Moderation

		Beta weights	t values	p-value	
Maternal Self-efficacy	Adjusted R ² = 0.286 F = 10.73***	Maternal education	.18	2.61	.010
		Child's sex	-.020	-0.29	.77
		Child problem behaviors	-.50	-3.56	.001
		Social support	.45	7.37	<.001
		Child has ASD	-.049	-0.58	.57
		Child is typical	-.10	-0.94	.35
		Child Problem Behaviors X Child has ASD	.073	0.62	.54
		Child Problem Behaviors X Child is Typical	-.15	-1.16	.25

Testing moderation of the proposed mediator ($Y = i + a_1M + a_2Z + a_3MZ + e$).

The second analysis examined whether child's diagnosis was a moderator for the inverse relationship between maternal stress (the hypothesized mediator) and maternal self-efficacy. If either maternal stress (a_1) or the interaction variables of Maternal Stress X Child's Diagnosis (a_3) were significant predictors, then moderated-mediation would be possible. This equation was altered from the Equation 2 recommended by Muller et al. (2002) in order to best represent the model of moderation proposed by this hypothesis (child's diagnosis moderating the relationship between maternal stress and maternal self-efficacy).

See Table 19 for regression analysis results. Within this second regression analysis, maternal stress (a_1) was a significant predictor of maternal self-efficacy. The interaction effect (a_3) was not significant. Because a_1 was significant, this indicated that moderated-mediation might be possible.

Table 19

Aim 3, Hypothesis 3, Regression 2: Testing Moderation of the Proposed Mediator

		Beta weights	t values	p-value	
Maternal Stress	Adjusted R ² = 0.52 F = 27.17***	Maternal education	.12	2.21	.028
		Child's sex	.028	0.50	.62
		Maternal stress	-.75	-5.72	<.001
		Child has ASD	.22	3.05	.003
		Child is typical	-.074	-0.84	.40
		Maternal Stress X Child has ASD	-.032	-0.31	.76
		Maternal Stress X Child is Typical	-.084	0.80	.43

Combination of equations ($Y = i + c'_1X + c'_2Z + c'_3XZ + b_1M + b_2MZ + e$).

Lastly, the third analysis assessed for moderation of the proposed mediated relationship.

The variables that would need to be significant for Equation 3 were slightly altered from Muller et al.'s (2002) suggestions in order to reflect the proposed model. Had maternal stress (a_1) and Maternal Stress X Child's Diagnosis (a_3) both been significant in Equation 2, then for Equation 3 either child problem behaviors (c_1) or Child Problem Behavior X Child's Diagnosis (c'_3) would need to have been significant for moderated-mediation.

Because only maternal stress (a_1) was significant in the second analysis, then only the interaction variables of Child Problem Behavior X Child's Diagnosis (c'_3) would need to be significant within equation 3 to in order to demonstrate moderated-mediation.

Table 20 presents results for this final regression analysis. Neither interaction effect (c'_3) was significant. Thus, moderated-mediation was not supported.

Table 20

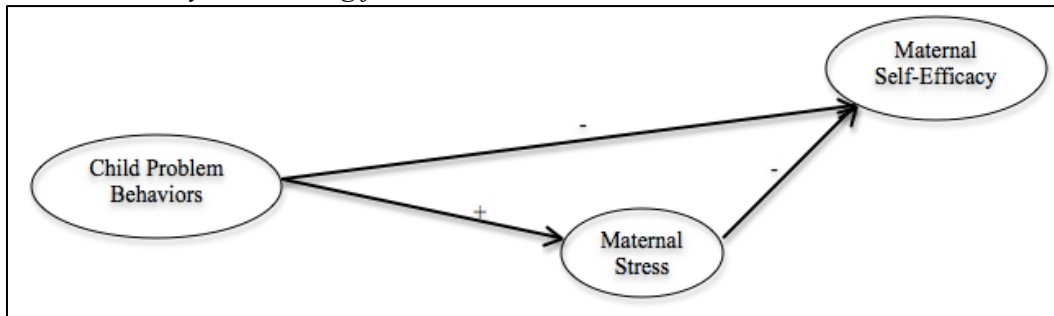
Aim 3, Hypothesis 3, Regression 3: Combination of Equations

		Beta weights	t values	p-value	
Maternal Self-efficacy	Adjusted R ² = 0.515 F = 19.07***	Maternal education	.12	2.20	.029
		Child's sex	.023	0.40	.69
		Child problem behaviors	-.16	-1.05	.30
		Child has ASD	.20	2.54	.012
		Child is typical	-.12	-1.24	.22
		Maternal Stress	-.66	-4.05	<.001
		Child Problem Behaviors X Child has ASD	.069	0.59	.55
		Child Problem Behaviors X Child is Typical	-.004	0.026	.98
		Maternal Stress X Child has ASD	-.079	-0.63	.53
		Maternal Stress X Child is Typical	-.078	-0.55	.59

Post-hoc analyses: testing for mediation. Although neither mediated-moderation nor moderated-mediation were supported within the current sample, because a portion of the proposed model was supported, additional analyses were conducted to assess whether only mediation could explain the relationship between child problem behaviors and maternal self-efficacy. Analyses were performed to determine whether maternal stress was a mediator for the relationship between child problem behaviors and maternal stress (see Figure 9).

Figure 9

Post-Hoc Analyses: Testing for Mediation



In order to test for mediation, three regression analyses were conducted, as advised by Baron and Kenny (1986). As shown in Table 21, child problem behaviors was a significant predictor to maternal self-efficacy, indicating an overall treatment effect. Child problem behaviors was also a significant predictor of the hypothesized mediator (maternal stress) as shown in Table 22. In the final analysis, when the hypothesized mediator was included with the independent variable (child problem behaviors) predicting to the outcome variable (maternal self-efficacy), the hypothesized mediator was a significant predictor and the independent variable was no longer significant (see Table 23). This indicated that maternal stress was a complete mediator for the relationship between child problem behaviors and maternal self-efficacy.

Table 21
Effect of the Independent Variable on the Dependent Variable

		Beta weights	t values	p-value	
Maternal Self-efficacy	Adjusted R ² = 0.289 F = 23.98***	Maternal education	.18	2.77	.006
		Child's sex	-.006	-0.09	.93
		Child problem behaviors	-.50	-7.49	<.001

Table 22
Effect of the Independent Variable on the Mediator

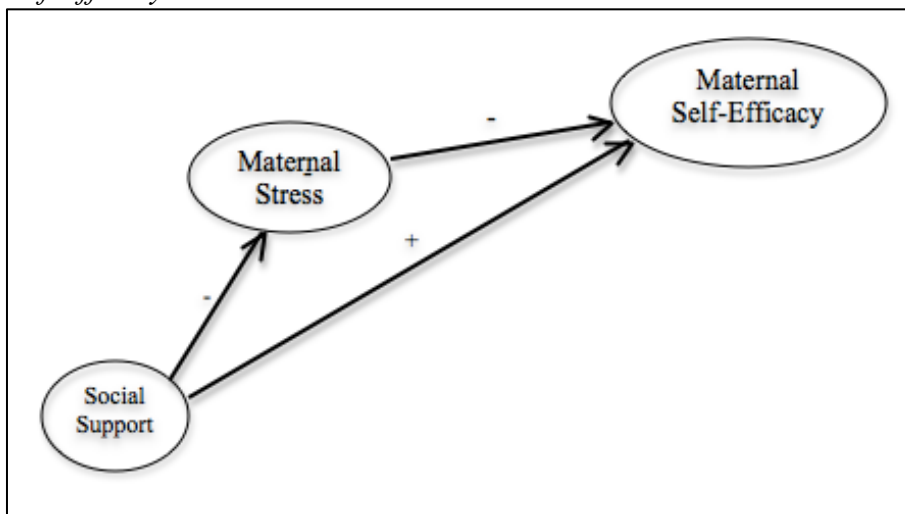
		Beta weights	t values	p-value	
Maternal Stress	Adjusted R ² = 0.473 F = 51.76***	Maternal education	-.14	2.40	.018
		Child's sex	-.016	-0.27	.79
		Child problem behaviors	-.66	11.57	<.001

Table 23
Effect of the Mediator on the Dependent Variable

		Beta weights	t values	p-value	
Maternal Self-efficacy	Adjusted R ² = 0.491 F = 42.06***	Maternal education	.097	1.72	.087
		Child's sex	-.016	-0.27	.78
		Child problem behaviors	-.084	-1.12	.27
		Maternal stress	-.63	-8.22	<.001

Post-hoc analyses: maternal stress as a mediator between social support and maternal self-efficacy. Because of the significant effect of social support on both maternal self-efficacy and maternal stress, analyses were conducted to test whether maternal stress mediated the relationship between social support and maternal self-efficacy (depicted in Figure 10).

Figure 10
Post-Hoc Analyses: Maternal Stress as a Mediator Between Social Support and Maternal Self-Efficacy



As shown in Table 24, social support was a significant predictor to maternal self-efficacy, indicating an overall treatment effect on the dependent variable. Social support also significantly predicted the mediator (maternal stress), as shown in Table 25. Finally, when the mediator (maternal stress) was included in the analysis with the independent variable (social support), predicting to the outcome variable (maternal self-efficacy), the mediator was a significant predictor and the effect size of the independent variable was reduced (see Table 26). Sobel Test results indicated that this level of effect size change for social support was significant (Sobel test statistic=6.33, $p < .001$), suggesting that the

relationship between social support and maternal self-efficacy is partially mediated by maternal stress.

Table 24

Effect of the Independent Variable on the Dependent Variable

		Beta weights	t values	p-value	
Maternal Self-efficacy	Adjusted R ² = 0.325 F = 28.31***	Maternal education	0.11	1.64	.10
		Child's sex	0.10	1.65	.10
		Social support	0.54	8.26	<.001

Table 25

Effect of the Independent Variable on the Mediator

		Beta weights	t values	p-value	
Maternal Stress	Adjusted R ² = 0.445 F = 46.40***	Maternal education	-0.053	-0.90	.37
		Child's sex	-0.16	-2.77	.006
		Social support	-0.64	10.90	<.001

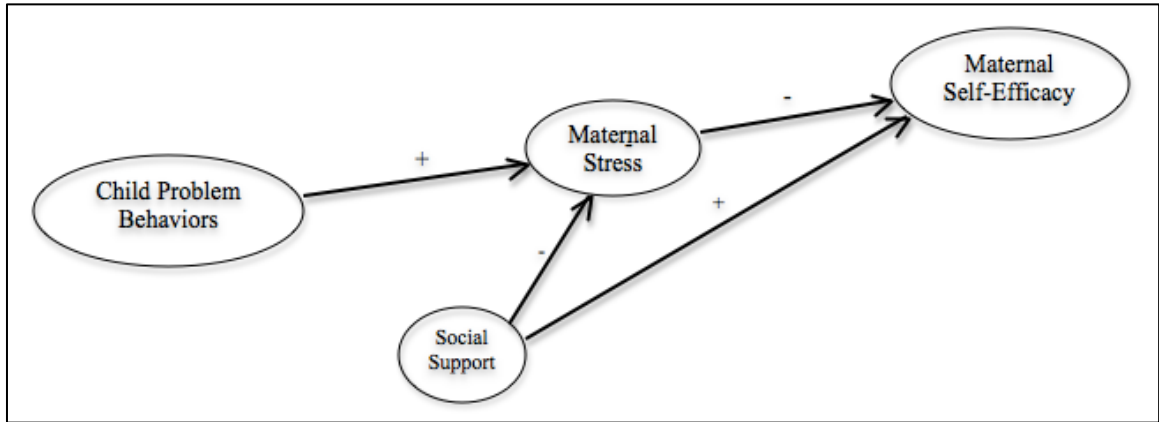
Table 26

Effect of the Mediator on the Dependent Variable

		Beta weights	t values	p-value	
Maternal Self-efficacy	Adjusted R ² = 0.504 F = 44.14***	Maternal education	0.076	1.37	.17
		Child's sex	0.013	0.24	.81
		Social support	0.17	2.33	.021
		Maternal stress	-0.57	-7.82	<.001

Given these results, the model for the relationship among these variables might best be modified to what is portrayed in Figure 11. Child problem behaviors is indirectly related to maternal self-efficacy via a direct relationship with maternal stress. Social support is partially mediated by maternal stress in regards to its relationship with maternal self-efficacy.

Figure 11
Revised Model of the Relationship Between Child Problem Behaviors, Social Support, Maternal Stress, and Maternal Self-Efficacy



CHAPTER 4

DISCUSSION

Diagnostic Group Differences for Perceived Stigma

This study is the first of its kind to quantitatively measure parenting-related perceived stigma (hereafter, will be referred to as “perceived stigma”) in the ASD and ADHD populations. On the whole, mothers of children with ASD and mothers of children with ADHD experienced perceived stigma to a greater extent than did mothers of typically developing children, which supported the study’s hypothesis. Additionally, as expected, there were no significant differences between the ASD and ADHD groups regarding total perceived stigma. Even when controlling for child problem behaviors these findings were significant, which indicates that the differences between the ASD/ADHD groups and the Typical group were not simply accounted for by differences in the child’s disruptiveness. Similarly, within each individual perceived stigma context area, mothers from the ASD group and the ADHD group reported more perceived stigma than mothers from the Typical group. Perceived stigma seems to be an experience that impacts mothers of children with developmental disabilities more so than mothers of typically developing children, regardless of their children’s problem behavior level and regardless of contextual setting.

Participants reported an equivalent level of perceived stigma within each of the three contextual settings. It is important to note that these results were obtained from analyses in which child's gender is controlled. Because ASD and ADHD have a gender bias (with more males than females), these findings may not actually represent mothers' experiences. In other words, experientially, mothers of children with ASD or ADHD may perceive stigma within the public sphere more so than within the school environment or among family members; however, because most of these mothers are parenting boys, and because the impact of gender was taken into account, this characteristic of ASD and ADHD was removed from the analysis.

Diagnostic Group Differences for Maternal Self-Efficacy

Although there were differences in maternal self-efficacy level between mothers of typically developing children and mothers of children diagnosed with ASD or ADHD, this variability seemed to be primarily related to child problem behaviors, rather than to the child's diagnostic label. Previous research investigating whether or not maternal self-efficacy is lower among mothers of children with ASD or ADHD has been inconsistent. The current findings suggest that having a child with ASD or ADHD is not necessarily a risk factor for having low maternal self-efficacy. Rather, having a child who is disruptive and aggressive is a risk factor for lowered maternal self-efficacy (and these types of child behaviors occur more frequently among children with ASD and ADHD).

Relationship Between Perceived Stigma and Maternal Self-Efficacy

As predicted by this study's hypothesis, higher perceived stigma was related to lower maternal self-efficacy, even when child problem behaviors was controlled.

Because this was not an experimental study, causality cannot be determined. This study's model proposed that perceiving stigma about one's parenting would impact how mothers feel about their parenting competence. In other words, experiencing more stigma would make mothers feel worse about their parenting abilities. Alternatively, it is also possible that feeling worse about one's parenting effectiveness (lower self-efficacy) causes mothers to be more sensitive to others' negative perceptions about their parenting (i.e., higher reports of perceived stigma), or may cause mothers to perceive stigma from others that may not actually be present. In other words, a lowered sense of maternal self-efficacy may heighten mothers' awareness and concerns about how others perceive them, whether or not this is true. The study's results did not support the hypothesis that diagnostic group would moderate the relationship between perceived stigma and maternal self-efficacy. According to these findings, experiencing blame and judgment about one's parenting is related to how mothers feel about their own parenting, regardless of whether or not one has a child with a disability, and irrespective of the child's level of problem behaviors.

Relationship Between Child Problem Behaviors and Maternal Self-Efficacy

This study did not find evidence for mediated-moderation or moderated-mediation for either of the hypothesized moderators (i.e., social support and child's diagnosis) regarding the relationship between child problem behaviors, maternal stress, and maternal self-efficacy. However, maternal stress did mediate the relationship between child problem behaviors and maternal self-efficacy, as proposed by the study's model. This suggests that maternal stress is an important bridge between child problem

behaviors and maternal self-efficacy, regardless of mothers' level of social support or child's diagnostic status. Since this was not an experimental study, the directionality for these relationships cannot be deduced from the data. Few studies have examined directionality between child problem behaviors and maternal stress, although Neece, Green, and Baker (2012) asked such a question via a longitudinal study with parents of children with and without developmental delay living in California and Pennsylvania. Neece et al. (2012) found a bidirectional relationship – child problem behaviors predicted future maternal stress, and also maternal stress predicted future child problem behaviors. Theoretically, it makes sense that having a child with more problem behaviors would tax a mother's resources and contribute to her feeling more parenting-related stress (Hastings, 2002), resulting in a mother feeling less effective about her parenting. Another possible direction of effects is in the reverse direction: higher levels of maternal stress might increase child problem behaviors indirectly via changes in parenting behaviors (Hastings, 2002). It has been shown that highly stressed parents are more likely to use authoritarian, harsh, and negative parenting practices (see review by Deater-Deckard, 1998). Such a harsh and negative parenting style may cause children to display more problem behaviors (Gershoff et al., 2010).

Relationship Between Social Support and Maternal Self-Efficacy

Although not originally part of the study's hypothesis, post-hoc analyses showed that maternal stress also partially mediated the relationship between social support and maternal self-efficacy. Lower levels of social support was related to higher reports of parenting stress, which was subsequently related to a lower sense of maternal self-

efficacy. Higher social support also had a direct relationship with higher maternal self-efficacy. Although previous research had not shown maternal stress to be a mediator between social support and maternal self-efficacy, studies have indicated social support to have a positive relationship with maternal self-efficacy (Cutrona & Troutman, 1986; Haldy & Hanzlik, 1990; Izzo et al., 2000; MacPhee et al., 1996) and a negative relationship with parenting stress (Hassal, Rose, & McDonald, 2005; Krauss, 1993; Tehee, Honan, & Hevey, 2009; Walls & Fletcher, 2009). A review article by Boyd (2002), focusing on mothers of children with ASD, posited that lack of social support may be stressful because parents are less involved with their community, participate in fewer recreational activities with their children, and subsequently have fewer outlets to reduce their stress. Such results highlight the importance of social support to parents' overall wellbeing.

Limitations

Diagnostic group inclusion and exclusion was based on the mother's confirmation that the child has (or has not) been diagnosed with ASD and ADHD, as well as the child's score on ASD and ADHD screening tools. However, a more valid diagnostic confirmation would involve a psychological evaluation and observation of the child, which was not conducted because of the time and resources necessary for such a procedure. As a result, this sample may not be representative of the complete spectrum of each of the diagnostic categories (e.g., some children may have been excluded because their scores on the ASD and ADHD screening tools were in the borderline range).

One limitation of this sample is that maternal education level impacted almost all of the study's variables, and the distribution of education levels was not equal across the three diagnostic groups. For example, there were a disproportionate number of mothers of children with ASD who had not attended college compared to the other two diagnostic groups. It is not clear why such a difference in maternal education level was present, as this writer was unable to find evidence that mothers of children with ASD in the general population are less educated than other groups of mothers. Maternal education was used as a covariant to control for education differences, but in doing so this may have weakened the strength of diagnostic differences that might otherwise be present.

There are a few characteristics of this study's sample that may not be representative of the broader U.S. population. Although mothers reported a range of household incomes, this study was not representative of very low-income mothers. The sample also was not representative of the U.S. population in terms of racial demographics, especially for the mothers of children with ADHD. There were more mothers who identified as White in this study than in the U.S. population, which means that the study's findings may not be generalizable to mothers of color. Mothers of color may experience other types of stigma related to racism or ethnic stereotypes, which may not be experienced by white mothers, and which was not assessed by this study.

Many participants from the ASD and ADHD groups were recruited from parent support groups, such as CHADD or Autism Speaks. It is possible that affiliation with such support groups affords parents a greater sense of social support, such as connections with parents of children with a similar diagnosis, as well as education about their child's

diagnosis from experts or other parents. The exact proportion of parents affiliated with such support groups, or the differences between mothers who are and are not affiliated with support groups, is unknown because this question was not explicitly asked. However, among the mothers who indicated how they heard about this study, the majority identified that it was through a parent support group. It is possible that mothers from the ASD group and ADHD group may not be representative of the overall populations of mothers of children with ASD and mothers of children with ADHD.

The participants from the Typical group are also not representative of the U.S. population because the majority of these mothers resided in Massachusetts (which was not the case for participants from the ASD and ADHD groups). This limits interpretation of this data since mothers from Massachusetts may be qualitatively different from mothers from other parts of the country. In the current study mothers from Massachusetts differed from mothers residing in other parts of the country regarding child problem behaviors, maternal stress, and social support, although such variations are likely attributed to diagnostic group differences (see Appendix B).

Unlike other scales that were used in this study (e.g., CBCL for child problem behaviors, PSI for maternal stress, and PSOC for maternal self-efficacy), there does not appear to be a widely used and well-validated measure to assess social support. As far as this writer is aware, different studies have used a range of scales, and although the Social Provisions Scale appeared to be a satisfactory measure (e.g., theoretically based, adequate reliability), it has limitations. The Social Provisions Scale assesses the extent to which an individual has other persons on which to rely, as opposed to specifically an individual's

sense of satisfaction with social support. As previously described, social support's relationship with parental self-efficacy is best assessed with satisfaction regarding social support (as opposed to numbers of social support resources; Crnic et al., 1983; Krauss, 1993; MacPhee et al., 1996). It is possible the social support did not moderate the relationship between child problem behaviors and maternal self-efficacy because the scale was not ideal to measure this construct. However, other scales that measure satisfaction with social support are also limited because they focus disproportionately on satisfaction with a particular area of social support (e.g., from a spouse; Leerkes & Burney, 2007).

Directions for Future Research

It is recommended that future studies measure social support with a scale that primarily assesses level of satisfaction regarding social support. This might require the development of a new scale that integrates aspects of different scales. For example, the Family Support Scale by Dunst, Trivette, and Jenkins (1984) is designed to gather information regarding the perceived helpfulness (measured on a 5-point likert scale) of different persons (e.g., parents, friends, spouse/partner, etc.). However, a limitation of this scale is that the social support score includes areas for which some parents may not identify (e.g., co-workers, older children, church members/minister), and if that area is not applicable for parents, then their social support satisfaction score will be lower. Such a measure might be improved by having the score be an average of all resources that are applicable to parents. A new questionnaire could be developed that is a combination of the Social Provisions Scale and the Family Support Scale – one that assesses satisfaction

and helpfulness of social support, but also inquires about this in general ways without requiring endorsement of all social support categories to score highly.

Longitudinal studies could provide additional information regarding the direction of effects between the study's constructs. This study aimed to investigate environmental factors that contribute to maternal self-efficacy. Future studies that are conducted across different time points could confirm whether maternal self-efficacy is actually influenced by (1) perceived stigma, (2) child problem behaviors, (3) social support, and (4) parenting stress.

Future studies should also investigate perceived stigma and influences on maternal self-efficacy among underrepresented mothers. Such populations of mothers include persons of color, low-income women, and mothers with a high school education or less. It is possible that experiences of perceived stigma and the environmental factors that influence maternal self-efficacy are different among these groups of mothers. One potential area of study would be the interaction of parenting-related perceived stigma and experiences of racism among mothers of color. Additionally, mothers from different cultural groups may be exposed to different cultural expectations about mothers' roles, acceptable parenting practices, and the influence a parent is expected to have on their child.

Feelings of maternal guilt is a factor that deserves further exploration. Mothers from the ASD group appeared to experience guilt on a more frequent basis than mothers from the ADHD and Typical groups; and mothers from the ADHD group appeared to experience guilt more frequently than mothers from the Typical group. Still, the majority

of mothers of typically developing children experienced some level of guilt over the course of a year. Guilt experiences appears to be common among mothers, and especially so for mothers of children with developmental disabilities. Future research could explore the relationship between maternal guilt and (1) perceived stigma, (2) maternal self-efficacy, and (3) child problem behaviors.

Similarly, mothers' beliefs about ASD and ADHD also require further investigation. Future studies can explore: (1) whether beliefs about overdiagnosis are different regarding ASD and ADHD, (2) whether mothers who perceive more stigma also think that more people believe their child's disorder is overdiagnosed, and (3) the relationship between maternal self-efficacy and beliefs that one's child's disorder (i.e., ASD or ADHD) is biologically-based.

While this study purposefully examined mothers' experiences of parental self-efficacy and perceived stigma, it is recommended that future studies focus on fathers regarding these experiences. Fathers are increasingly taking on more caregiving roles than they had in the past (Bianchi, 2011), and studies have shown that their experience of parenting is distinct from that of mothers (Leerkes & Burney, 2007; Murdock, 2013; Sevigny & Loutzenhiser, 2009). A question to answer is whether there is a similar relationship between perceived stigma and parental self-efficacy among fathers as there seems to be among mothers. If there is not the same relationship, then why do fathers process the experience of perceived stigma differently from mothers, and what can be learned from that?

Children may also be impacted by their mothers' experiences of perceived stigma. A study by Wiener et al. (2012) asked nine- to 14-year old children with ADHD about their own experiences of being stigmatized because of their ADHD label and because of their problem behaviors (p. 223). They found that in comparison to typically developing children, participants with ADHD thought that they caused their parents to be embarrassed by their ADHD or their behaviors (i.e., "parent stigma") to a greater extent. Additionally, children who reported more stigma also reported lower self-esteem (Wiener et al., 2012). It would be helpful to know whether mothers who experience more perceived stigma have children who report more parent stigma. It may be that mothers' perception of stigma not only impacts themselves, but may also affect their children, especially as the children enter adolescence, such as the participants in the Wiener et al. study. However, children with other types of developmental disabilities, such as youth with ASD, may not respond in the same way. Children with ASD often lack the ability to understand others' emotional states and how their own behaviors might impact how another person thinks or behaves. Subsequently, it is possible that youth with ADHD may be more impacted by their parents' experiences of perceived stigma compared to youth with ASD. Such research investigating this question would highlight an area of vulnerability for children with certain developmental disabilities, and may provide information about additional risk factors for children with ADHD.

It would be also helpful to explore why some mothers of children with developmental disabilities reported higher levels of perceived stigma than others. Knowing the factors that contribute to higher reports of perceived stigma may contribute

to the development intervention tools so that mothers are not as affected by perceived stigma. This study found that perceived stigma is related to lower maternal self-efficacy. Although child's diagnosis was not found to be a moderator, there might be other factors moderating the relationship between perceived stigma and maternal self-efficacy, and there might also be unexamined factors mediating this relationship.

Clinical Implications

This study indicates the importance of implementing specific interventions for families of children with ASD or ADHD that target (a) reducing child problem behaviors, (b) helping mothers manage parenting stress, (c) increasing social support and (d) promoting a sense of parenting self-efficacy. Research has shown that when parents learn how to manage their children's challenging behaviors, they also often benefit personally in terms of reduced stress, increased self-efficacy, and improved wellbeing in other areas (see reviews by Karst & Van Hecke, 2012 [for ASD] and Lee, Niew, Yang, Chen, & Lin, 2012 [for ADHD]). Targeted interventions for parents of children with ASD (Sofronoff & Farbotko, 2002; Whittingham, Sofronoff, Sheffield, & Sanders, 2009; Keen, Couzens, Muspratt, & Rodger, 2010) and for parents of children with ADHD (Hoath & Sanders, 2002; Azevedo, Seabra-Santos, Gaspar, & Homem, 2013) have been shown to improve parental self-efficacy, as well as reduce child problem behaviors and parenting stress. It is recommended that more parents of children with ASD and ADHD have access to such empirically supported treatment programs.

It is important for clinicians working with families of children with developmental disabilities to be aware that many mothers perceive stigma about their

parenting, especially mothers of children with ASD and ADHD. Perceiving unkind looks or hearing judgmental statements about one's parenting could understandably cause a mother to doubt her own parenting abilities. This relationship between perceived stigma and maternal self-efficacy seems to be apparent whether or not one's child is diagnosed with a developmental disability. Clinicians should also be aware that mothers are at risk for low maternal self-efficacy if they think their child has problem behaviors.

Clinicians have the skills and authority (a) to normalize the experience of perceived stigma for parents and (b) to help parents disconnect their actual parenting competence from messages of blame and judgment about their parenting skills. In order to do this effectively, clinicians need to be knowledgeable about the phenomenon of perceived stigma and need to communicate relevant information to parents. It is important for clinicians to help mothers of children with developmental disabilities understand that they are not alone in feeling such blame and judgment, and that many mothers feel similarly. Further, in their role, clinicians can provide support and encouragement regarding the challenging task of raising children with disruptive behaviors. Clinicians are able to indicate to mothers the skills they *do* have and what they do well in terms of managing their children and supporting their development, which may subsequently boost a mother's sense of parental self-efficacy. Additionally, clinicians can explain to mothers that strangers, teachers, or even family members may have certain ideas regarding how mothers should parent or how children should behave, but that those notions may not be valid for families of children with developmental disabilities. Clinicians can help mothers decouple their own sense of parenting

effectiveness from the messages they hear from others, and it is hoped that clinicians will do this based on work from this study.

For the current study, it is important to note that *perceived* stigma was assessed, as opposed to actual stigma messages displayed by others. What is known about stigma experiences from this study was interpreted through the lens of the parent, not from an objective observer. However, in terms of effect, it may be that perception (as opposed to objective reality) is the key variable in terms of the impact of stigma on wellbeing. In their study assessing the development of a tool to measure perceived stigma among adults with an intellectual disability, Ali et al. (2008) found that “it is the perception of the discriminatory act rather than the degree of discrimination that is most likely to influence psychological responses and wellbeing. Therefore, the concept of perceived stigma is valuable” (p. 414). For clinicians working with families, it is important for them to be aware that it matters less whether the stigma perceived by parents is “real,” but rather that parents perceive stigma at all.

Concluding Thoughts

This study highlights some of the challenging external factors that mothers encounter when raising a child with ASD or ADHD. Mothers of children with ASD and mothers of children with ADHD often experience judgment and blame from those around them about their parenting. These messages of stigma, and also their children’s problem behaviors, contribute to a challenging situation, and because of these experiences mothers are at-risk for developing low parental self-efficacy.

It is the hope that this study can assist parents of children with ASD or ADHD who relate to these experiences recognize that they are not alone. Further, interventions have been developed that can help to eliminate child problem behaviors, reduce parenting stress, and bolster maternal self-efficacy. Mothers also appear to gain strength from personal resources, such as social support. Such interventions and resources are important for parents' mental health, and for their families' and their children's over functioning, and should be provided to parents in ways that are possible.

APPENDIX A
QUESTIONNAIRE

Informed Consent
University of Massachusetts Boston
Department of Psychology
100 Morrissey Boulevard
Boston, MA 02125-3393

Consent Form for *Mothers' Experiences of Parenting: Yourself, Others, and Your Child*

Principal Investigator:
Sara Rosenblum-Fishman, M.A.

Introduction and Contact Information

You are asked to take part in a research project that is examining experiences that mothers have that might influence the ways they feel about their role as a mother. The researcher is Sara Rosenblum-Fishman, M.A., doctoral candidate of clinical psychology.

If you have further questions about the project or the results of the project, you may contact Sara Rosenblum-Fishman at Sara.Rosenblum001@umb.edu or at 617-971-8353. You can also contact the supervising faculty member and co-investigator of this project, Laurel Wainwright, Ph.D., at 617-287-6376.

Description of the Project:

This study is examining factors that may or may not impact the way mothers feel about their role as mothers. Participants in this study are mothers of children with autism spectrum disorder, mothers of children with Attention-Deficit/Hyperactivity Disorder, and mothers of typically developing children. We are interested in mothers of school-age children between the ages of 6- and 11-years-old. Some of the experiences that we are interested in include child behaviors that are troublesome or difficult to manage, the level of stress mothers feel in their daily lives, and the positive and negative ways in which mothers experience being a parent.

Participation in this research involves completing a series of questionnaires. Participation in this study will take 40-45 minutes.

If you decide to participate in this study, you will be asked to answer a series of questions. These questions will include information that allows us to describe general information about you and your family, educational services your child may receive, your

experiences as a parent, and your child's behaviors. Most questions will be in multiple-choice format. Your participation in this study is voluntary and you can skip questions or stop at any time.

At the end of the questionnaire, you will have the option to enter into a drawing for a \$100 gift card. You will be asked to provide your name and e-mail address or phone number so that we can contact you if you are a winner of the drawing. Your name and e-mail address/phone number will be stored separately from the answers to the other questions. After data has been collected, we will have three drawings for the \$100 gift cards.

Risks or Discomforts:

The primary risk associated with this study is the possibility that some of the questions could cause you to feel sad or uncomfortable because some of the time we will be asking you to answer questions about things that might be harder to deal with as a parent. For example, you will be asked questions about your child's behavior, which may include unusual or atypical behaviors. If at any time you feel too distressed to continue, please feel free to stop filling out the questionnaire or skip those questions causing you distress. You may also speak with Dr. Laurel Wainwright to discuss any distress or other issues related to your participation in this study.

Confidentiality and Anonymity:

Your participation in this research is confidential. That is, the information gathered for this project will not be published or presented in a way that would allow anyone to identify you. To ensure your confidentiality, data will be labeled by number and will not be connected to your name. You do not need to provide your name unless you would like to be entered into the drawing for one of three \$100 gift cards. The data file containing names and contact information will be deleted once the study is completed.

Voluntary Participation:

The decision whether or not to take part in this research study is voluntary. If you do decide to take part in this study, you may end your participation at any time without consequence.

Rights and Complaints:

You have the right to ask questions about this research before you sign this form and at any time during the study. You can reach the principle investigator, Sara Rosenblum-Fishman at Sara.Rosenblum001@umb.edu at 617-971-8353. The faculty member co-investigator, Dr. Laurel Wainwright, can be reached at 617-287-6376.

If you have any questions or concerns about your rights as a research participant, please contact a representative of the Institutional Review Board (IRB) at the University of

Massachusetts Boston, which oversees research involving human participants. The IRB may be reached at the following address:

University of Massachusetts Boston
IRB, Quinn Administration Building 2-080
100 Morrissey Boulevard
Boston, MA 02125-3393

You can also contact the IRB by telephone or e-mail at (617) 287-5370 or at human.subjects@umb.edu.

Signature:

I HAVE READ THE CONSENT FORM. MY QUESTIONS HAVE BEEN ANSWERED. SELECTING THE "CONTINUE" BUTTON BELOW MEANS THAT I CONSENT TO PARTICIPATE IN THIS STUDY. I ALSO CERTIFY THAT I AM 18 YEARS OF AGE OR OLDER.

If you have read and understand the above statements, please click on the "Continue" button below to indicate that you are over 18 and that you consent to participate in this study.

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PLEASE READ BEFORE PROCEEDING:

Before you continue with this questionnaire, we want to make sure that you are a good fit for this study. We can only include mothers in our study who meet our inclusion criteria.

Please click on the "Continue" button *only if you can answer "yes" to each of the bulleted inclusion criteria. Thank you!*

The inclusion criteria are as follows:

- You are a female caregiver of a child
- You have one or more children who are between the ages of 6-years-old and 11-years-old (including 6- & 11-year-olds)
 - Your child in this age range is in the 5th grade, or below
- You have legal custody of your child at least 50% of the time
- You have taken care of your child for at least five years
- Your child is NOT primarily home-schooled
- Your child does NOT primarily reside at a residential school
- Your child does NOT have a significant sensory impairment (e.g., blindness; deafness)
- Your child does NOT have a significant physical impairment (e.g., cerebral palsy)
- Your child does NOT have a genetic disorder (e.g., Down syndrome; Williams Syndrome) unrelated to an autism spectrum disorder
- Your child does NOT have a chronic illness (e.g., seizure disorder; spina bifida); *note: Asthma is okay*
- Your child does NOT have a significant psychiatric disorder (e.g., bipolar disorder; schizophrenia); *note: Autism Spectrum Disorder and ADHD are okay*

By clicking on the "Continue" button (below), you are confirming that you meet all of these inclusion criteria for this project.

If you do NOT meet one or more of the inclusion criteria, we thank you very much for your interest in this research project, but unfortunately this study is not the right fit for you.

If you are unsure whether or not you meet the inclusion criteria, you may contact the Principle Investigator of this study, Sara Rosenblum-Fishman at Sara.Rosenblum001@umb.edu or at 617-971-8353. You may also contact the faculty member co-investigator, Dr. Laurel Wainwright, at 617-287-6376, to gain clarification.

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1)⁷ How many children do you have between the ages of 6-years-old and 11-years-old (including 6- & 11-year-olds)?

NOTE: child(ren) must also be in 5th grade or below

One child within this age range

More than one child in this age range

2) Has your child been diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD, or ADD) by a professional?⁸

- Yes⁹
 No¹⁰

3) Have any of your children within this age range been diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD, or ADD) by a professional?

- Yes¹¹
 No¹²

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If you have **more than one** child with Attention-Deficit/Hyperactivity Disorder (ADHD) who fits within the age window, please think about your child whose birth day and month is closest to today. For the remainder of this questionnaire, please answer questions in relation to *this* child.

You may want to write down the name of this child as a reference for yourself.

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⁷ The question numbers in bold font are meant for the reader of this paper to facilitate comprehension of the sequence of items. The question numbers in standard font were the same as those used for the participants.

⁸ Initially, this questionnaire was administered with the questions inquiring about having a child with ASD before the questions inquiring about having a child with ADHD. However, the order of these questions was switched midway through the data collection process because there were not enough participants from the ADHD group, and there was a sufficient number of participants from the ASD group. The version included in this appendix is the second (and final) design.

⁹ Participants were automatically directed to question #4.

¹⁰ Participants were automatically directed to question #8.

¹¹ Participants were automatically directed to the next page.

¹² Participants were automatically directed to question #9.

- 4) Please specify the type of Attention-Deficit/Hyperactivity Disorder (ADHD):
- Predominantly Inattentive Type
 - Predominantly Hyperactive-Impulsive Type
 - Combined Type
 - Do not know
 - Other (please specify)
- 5) What type of professional made/confirmed this diagnosis?
(Please check all that apply)
- Medical doctor (i.e. pediatrician; psychiatrist)
 - Other medical professionals (i.e., nurse practitioner)
 - Licensed Psychologist (i.e., clinical psychologist; school psychologist)
 - Other licensed mental health professional (i.e. clinical social worker)
 - Early Intervention provider (i.e., speech therapist; occupational therapist; physical therapist)
 - Do not know
 - Other (please specify) _____
- 6) Do *you* believe that your child has Attention-Deficit/Hyperactivity Disorder (ADHD)?
- Yes
 - No
- 7) How confident are you in your child's diagnosis of Attention-Deficit/Hyperactivity Disorder (ADHD)?¹³
- Extremely confident
 - Mostly confident
 - Somewhat confident
 - A little confident
 - Not confident at all
- | | |
|---|--|
| <p>8) Has your child been diagnosed with an autism spectrum disorder (Autistic Disorder; Asperger's Disorder; or Pervasive Developmental Disorder not Otherwise Specified [PDD]) by a professional?</p> <ul style="list-style-type: none"> <input type="radio"/> Yes¹⁴ <input type="radio"/> No¹⁵ | <p>9) Have any of your children within this age range been diagnosed with an autism spectrum disorder (Autistic Disorder; Asperger's Disorder; or Pervasive Developmental Disorder not Otherwise Specified [PDD]) by a professional?</p> <ul style="list-style-type: none"> <input type="radio"/> Yes¹⁶ <input type="radio"/> No¹⁷ |
|---|--|

¹³ Participants were automatically directed to question #14.

¹⁴ Participants were automatically directed to question #10.

¹⁵ Participants were automatically directed to question #14.

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If you have **more than one** child with autism spectrum disorder who fits within the age window, please think about your child whose birth day and month is closest to today. For the remainder of this questionnaire, please answer questions in relation to *this* child.

You may want to write down the name of this child as a reference for yourself.

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- 10)** Please specify the type of autism spectrum disorder diagnosis:
- Autistic Disorder
 - Asperger's Disorder
 - Pervasive Developmental Disorder Not Otherwise Specified (PDD)
 - Do not know
 - Other (please specify) _____
- 11)** What type of professional made/confirmed this diagnosis?
(Please check all that apply)
- Medical doctor (i.e. pediatrician; psychiatrist)
 - Other medical professionals (i.e., nurse practitioner)
 - Licensed Psychologist (i.e., clinical psychologist; school psychologist)
 - Other licensed mental health professional (i.e. clinical social worker)
 - Early Intervention provider (i.e., speech therapist; occupational therapist; physical therapist)
 - Do not know
 - Other (please specify) _____
- 12)** Do *you* believe that your child has an autism spectrum disorder?
- Yes
 - No
- 13)** How confident are you in your child's diagnosis of autism spectrum disorder?¹⁸
- Extremely confident
 - Mostly confident

¹⁶ Participants were automatically directed to the next page.

¹⁷ Participants were automatically directed the page before question #14.

¹⁸ Participants were automatically directed to question #14.

- Somewhat confident
- A little confident
- Not confident at all

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Please, think about your child whose birth day and month is closest to today. For the remainder of this questionnaire, please answer questions in relation to *this* child.

You may want to write down the name of this child as a reference for yourself.

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14) 1) What is your child's birth month?

- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December

15) 2) What is your child's birth year?

- 2000
- 2001
- 2002
- 2003
- 2004
- 2005
- 2006

16) 3) In what grade is your child?

- Kindergarten
- 1st
- 2nd
- 3rd

- 4th
- 5th
- Other (please specify) _____

- 17) 4) What is your child's sex?
- Male
 - Female
 - Other (please specify) _____
- 18) 5) Does your child have any other psychiatric or medical condition(s)? Please specify: _____
- 19) 6) What is your relationship to your child?
- Biological mother¹⁹
 - Stepmother²⁰
 - Adoptive Mother²¹
 - Legal Guardian²²
 - Other (please specify) _____²³
- 20) 7) If Legal Guardian, please specify relationship type: _____

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INSTRUCTIONS: The following questions help us get a better sense of who you are. We know that these categories do not fully capture the complexities of each individual's experience; however, they are an attempt to reflect the diversity of people's identities. Remember that you are free to choose not to respond to any questions that you are not comfortable answering.

- 21) 1) What is your current age?
- 22) 2) What is your current relationship status?
- Single
 - Married
 - Cohabiting

¹⁹ Participants were automatically directed to next page.

²⁰ Participants were automatically directed to next page.

²¹ Participants were automatically directed to next page.

²² Participants were automatically directed to question #20.

²³ Participants were automatically directed to next page.

- Separated
 - Divorced
 - Widowed
- 23)** 3) What is the highest grade in school you have completed?
- 8th grade or less
 - 1-3 years of high school
 - 12th grade, high school diploma
 - Vocational school/other non-college
 - 1-3 years of college
 - College degree (e.g., B.A., B.S.)
 - Master's degree (e.g., MA, MBA, MS)
 - Professional degree (e.g., MD, JD, PhD)
- 24)** 4) In what state do you primarily reside?²⁴
- 25)** 5) Currently, the total annual income for your household is:
- \$0 - \$15,000
 - \$15,001 - \$25,000
 - \$25,001 - \$35,000
 - \$35,001 - \$50,000
 - \$50,001 - \$75,000
 - \$75,001 - \$100,000
 - \$100,001 - \$200,000
 - More than \$200,000
- 26)** 6) What is the total number of people who currently rely on this income (including yourself)? _____
- 27)** 7) How would you describe your current financial situation?
- Routinely unable to purchase sufficient food or other basic necessities
 - Occasionally unable to purchase sufficient food or other basic necessities
 - Sometimes worried about having enough money for the necessities
 - Never worried about having enough money for the necessities
 - Have more than enough money for necessities and some luxuries

We're interested in getting a complete picture of your and your child's racial and ethnic background. Because this information can be so complex, we are going to ask you several questions about your race and ethnicity and your child's race and ethnicity in order to get as complete a picture as possible.

²⁴ Participants were provided with a pull-down menu listing all 50 states in alphabetical order, and an "Other" category.

28) Racial categories are based on visible attributes (often skin or eye color and certain facial and bodily features) and self-identification.

8) Please choose the category/categories that best describe your racial identity. You can choose more than one.

- Asian
- Black or African American
- Latino(a)/Hispanic
- Native American or Alaskan Native
- Pacific Islander/Native Hawaiian
- White
- Multiracial
- Other (please specify) _____

29) 9) Please choose the category/categories that best describe *your child's* racial identity. You can choose more than one.

- Asian
- Black or African American
- Latino(a)/Hispanic
- Native American or Alaskan Native
- Pacific Islander/Native Hawaiian
- White
- Multiracial
- Other (please specify)

30) Ethnicity typically emphasizes the common history, nationality, geography, language, food, or dress of groups of people (such as Haitian, African-American, European-American, Dominican, Irish, Cantonese, etc.)

10) In your own words, to which ethnic group(s) do you belong?

31) 11) In your own words, to which ethnic group(s) does *your child* belong?

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32) 12) Does your child take any medications?

- Yes²⁵
- No²⁶

²⁵ Participants were automatically directed to questions #33-37.

²⁶ Participants were automatically directed to next page.

		Name of Medication
33)	Medication 1	
34)	Medication 2	
35)	Medication 3	
36)	Medication 4	
37)	Medication 5	

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Some children who may have difficulty learning in the classroom receive extra academic support (special education services) to help them learn best. These services include things like resource room help, modified assignments, sitting in front, behavior plans, extra time on tests, or extra help with reading or math. Some children receive these services informally, while other children have an I.E.P. (Individualized Education Plan), which is a contract between the school and the parent/guardian that describes the extra support the child will receive. Still others have a 504 plan, which is a non-binding agreement between the school and the parent/guardian to provide extra academic support.

- 38)** 13) Does your child have an I.E.P. (Individualized Education Plan)?
- Yes²⁷
 - No²⁸
 - Do not know²⁹

- 39)** Please describe the services your child receives through his/her IEP:
-

- 40)** 14) Does your child have a 504 plan (extra academic support)?
- Yes³⁰
 - No³¹
 - Do not know³²

- 41)** Please describe the services your child receives through his/her 504 plan:
-

²⁷ Participants were automatically directed to questions #39.

²⁸ Participants were automatically directed to questions #40.

²⁹ Participants were automatically directed to questions #40.

³⁰ Participants were automatically directed to questions #41.

³¹ Participants were automatically directed to questions #42.

³² Participants were automatically directed to questions #42

- 42) 15) Does your child currently receive *any* special education services not already described (including outside of school)?
- Yes³³
 - No³⁴
 - Do not know³⁵

43) Please describe the services: _____

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16) Please provide us with information about your *other* children:

(If any of these lines are not applicable to you, please leave them blank)

	Age	Sex	Diagnosed with ADHD/ADD	Diagnosed with an Autism Spectrum Disorder?	Diagnosed with another disability? (please specify)
44) Child 1					
45) Child 2					
46) Child 3					
47) Child 4					
48) Child 5					

- 49) 17) If there is any additional information that you think we should know about your family, please describe it below. This is *optional*.

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Listed below are a number of statements. Please respond to each item, indicating your level of agreement or disagreement with each statement.³⁶

³³ Participants were automatically directed to questions #43.

³⁴ Participants were automatically directed to next page.

³⁵ Participants were automatically directed to next page

³⁶ The following 17 questions are from the Parent Sense of Competence scale (Johnston & Mash, 1989).

- 50)** 1) The problems of taking care of a child are easy to solve once you know how your actions affect your child, an understanding I have acquired.
- Strongly Agree
 - Agree
 - Mildly Agree
 - Mildly Disagree
 - Disagree
 - Strongly Disagree
- 51)** 2) Even though being a parent could be rewarding, I am frustrated now while my child is at his/her present age.
- Strongly Agree
 - Agree
 - Mildly Agree
 - Mildly Disagree
 - Disagree
 - Strongly Disagree
- 52)** 3) I go to bed the same way I wake up in the morning, feeling I have not accomplished a whole lot.
- Strongly Agree
 - Agree
 - Mildly Agree
 - Mildly Disagree
 - Disagree
 - Strongly Disagree
- 53)** 4) I do not know why it is, but sometimes when I'm supposed to be in control, I feel more like the one being manipulated.
- Strongly Agree
 - Agree
 - Mildly Agree
 - Mildly Disagree
 - Disagree
 - Strongly Disagree
- 54)** 5) My mother was better prepared to be a good mother than I am.
- Strongly Agree
 - Agree
 - Mildly Agree
 - Mildly Disagree
 - Disagree
 - Strongly Disagree

- 55)** 6) I would make a fine model for a new mother to follow in order to learn what she would need to know in order to be a good parent.
- Strongly Agree
 - Agree
 - Mildly Agree
 - Mildly Disagree
 - Disagree
 - Strongly Disagree
- 56)** 7) Being a parent is manageable, and any problems are easily solved.
- Strongly Agree
 - Agree
 - Mildly Agree
 - Mildly Disagree
 - Disagree
 - Strongly Disagree
- 57)** 8) A difficult problem in being a parent is not knowing whether you're doing a good job or a bad one.
- Strongly Agree
 - Agree
 - Mildly Agree
 - Mildly Disagree
 - Disagree
 - Strongly Disagree
- 58)** 9) Sometimes I feel like I'm not getting anything done.
- Strongly Agree
 - Agree
 - Mildly Agree
 - Mildly Disagree
 - Disagree
 - Strongly Disagree
- 59)** 10) I meet my own personal expectations for expertise in caring for my child.
- Strongly Agree
 - Agree
 - Mildly Agree
 - Mildly Disagree
 - Disagree
 - Strongly Disagree
- 60)** 11) If anyone can find the answer to what is troubling my child, I am the one.

- Strongly Agree
- Agree
- Mildly Agree
- Mildly Disagree
- Disagree
- Strongly Disagree

- 61)** 12) My talents and interests are in other areas, not in being a parent.
- Strongly Agree
 - Agree
 - Mildly Agree
 - Mildly Disagree
 - Disagree
 - Strongly Disagree
- 62)** 13) Considering how long I've been a mother, I feel thoroughly familiar with this role.
- Strongly Agree
 - Agree
 - Mildly Agree
 - Mildly Disagree
 - Disagree
 - Strongly Disagree
- 63)** 14) If being a mother of a child were only more interesting, I would be motivated to do a better job as a parent.
- Strongly Agree
 - Agree
 - Mildly Agree
 - Mildly Disagree
 - Disagree
 - Strongly Disagree
- 64)** 15) I honestly believe I have all the skills necessary to be a good mother to my child.
- Strongly Agree
 - Agree
 - Mildly Agree
 - Mildly Disagree
 - Disagree
 - Strongly Disagree
- 65)** 16) Being a parent makes me tense and anxious.
- Strongly Agree

- Agree
- Mildly Agree
- Mildly Disagree
- Disagree
- Strongly Disagree

66) 17) Being a good mother is a reward in itself.

- Strongly Agree
- Agree
- Mildly Agree
- Mildly Disagree
- Disagree
- Strongly Disagree

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When children engage in inappropriate or disruptive behaviors, parents may experience various feelings and emotions connected to it. Even though some may seem inappropriate to have, all of these feeling and emotions are very natural and experienced by many individuals. Please indicate how true or false the following statements are for you right now. Please describe the way you actually do feel - not the way you think you should feel.³⁷

First, thinking about interactions that you have with your child in public spaces (i.e. grocery stores, public park, etc.), please respond to the following items:

67) 1) I feel that I am odd or abnormal because of my child's inappropriate/disruptive public behaviors.

- Definitely False
- Somewhat False
- Neither True nor False
- Somewhat True
- Definitely True

68) 2) There have been times when I have felt ashamed about my child's inappropriate/disruptive public behaviors.

- Definitely False
- Somewhat False

³⁷ The following 24 questions are from the Perceived Stigma Scale – Revised (Mickelson, Wroble, & Helgeson, 1999), adapted for this study.

- Neither True nor False
 - Somewhat True
 - Definitely True
- 69)** 3) I *never* feel self-conscious about my child's inappropriate/disruptive public behaviors.
- Definitely False
 - Somewhat False
 - Neither True nor False
 - Somewhat True
 - Definitely True
- 70)** 4) People treat me differently when they find out that I have a child with inappropriate/disruptive public behaviors.
- Definitely False
 - Somewhat False
 - Neither True nor False
 - Somewhat True
 - Definitely True
- 71)** 5) I *never* feel embarrassed about my child's inappropriate/disruptive public behaviors.
- Definitely False
 - Somewhat False
 - Neither True nor False
 - Somewhat True
 - Definitely True
- 72)** 6) People look down on me because of my child's inappropriate/disruptive public behaviors.
- Definitely False
 - Somewhat False
 - Neither True nor False
 - Somewhat True
 - Definitely True
- 73)** 7) I have found that people say negative or unkind things about me behind my back because of my child's inappropriate/disruptive public behaviors.
- Definitely False
 - Somewhat False
 - Neither True nor False
 - Somewhat True
 - Definitely True

- 74) 8) I have been excluded from social gatherings because of my child's inappropriate/disruptive public behaviors.
- Definitely False
 - Somewhat False
 - Neither True nor False
 - Somewhat True
 - Definitely True

Now, thinking about interactions that you have at your child's school and with school personnel, please respond to the following items:

- 75) 9) I feel that I am odd or abnormal because of my child's inappropriate/disruptive behaviors at school.
- Definitely False
 - Somewhat False
 - Neither True nor False
 - Somewhat True
 - Definitely True
- 76) 10) There have been times when I have felt ashamed about my child's inappropriate/disruptive school behaviors.
- Definitely False
 - Somewhat False
 - Neither True nor False
 - Somewhat True
 - Definitely True
- 77) 11) I *never* feel self-conscious about my child's inappropriate/disruptive school behaviors.
- Definitely False
 - Somewhat False
 - Neither True nor False
 - Somewhat True
 - Definitely True
- 78) 12) People treat me differently when they find out that I have a child with inappropriate/disruptive behaviors at school.
- Definitely False
 - Somewhat False
 - Neither True nor False
 - Somewhat True
 - Definitely True

- 79)** 13) I *never* feel embarrassed about my child's inappropriate/disruptive school behaviors.
- Definitely False
 - Somewhat False
 - Neither True nor False
 - Somewhat True
 - Definitely True
- 80)** 14) People look down on me because of my child's inappropriate/disruptive school behaviors.
- Definitely False
 - Somewhat False
 - Neither True nor False
 - Somewhat True
 - Definitely True
- 81)** 15) I have found that people say negative or unkind things about me behind my back because of my child's inappropriate/disruptive school behaviors.
- Definitely False
 - Somewhat False
 - Neither True nor False
 - Somewhat True
 - Definitely True
- 82)** 16) I have been excluded from school functions because of my child's inappropriate/disruptive school behaviors.
- Definitely False
 - Somewhat False
 - Neither True nor False
 - Somewhat True
 - Definitely True

Lastly, thinking about interactions that you have with members of your and your child's family, please respond to the following items:

- 83)** 17) I feel that I am odd or abnormal because of my child's inappropriate/disruptive behaviors among family.
- Definitely False
 - Somewhat False
 - Neither True nor False
 - Somewhat True
 - Definitely True

- 84)** 18) There have been times when I have felt ashamed about my child's inappropriate/disruptive behaviors among family.
- Definitely False
 - Somewhat False
 - Neither True nor False
 - Somewhat True
 - Definitely True
- 85)** 19) I *never* feel self-conscious about my child's inappropriate/disruptive behaviors among family.
- Definitely False
 - Somewhat False
 - Neither True nor False
 - Somewhat True
 - Definitely True
- 86)** 20) Family members treat me differently when they find out that I have a child with inappropriate/disruptive behaviors.
- Definitely False
 - Somewhat False
 - Neither True nor False
 - Somewhat True
 - Definitely True
- 87)** 21) I *never* feel embarrassed about my child's inappropriate/disruptive behaviors among family.
- Definitely False
 - Somewhat False
 - Neither True nor False
 - Somewhat True
 - Definitely True
- 88)** 22) Family members look down on me because of my child's inappropriate/disruptive behaviors.
- Definitely False
 - Somewhat False
 - Neither True nor False
 - Somewhat True
 - Definitely True
- 89)** 23) I have found that family members say negative or unkind things about me behind my back because of my child's inappropriate/disruptive behaviors.
- Definitely False
 - Somewhat False

- Neither True nor False
- Somewhat True
- Definitely True

- 90)** 24) I have been excluded from family functions because of my child's inappropriate/disruptive behaviors.
- Definitely False
 - Somewhat False
 - Neither True nor False
 - Somewhat True
 - Definitely True

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In answering the following questions, think about your current relationships with friends, family members, co-workers, community members, and so on. Please indicate to what extent each statement describes your current relationships with other people.³⁹

- 109)** 1) There are people I can depend on to help me if I really need it.
- Strongly Disagree
 - Disagree
 - Agree
 - Strongly Agree
- 110)** 2) I feel that I do not have close personal relationships with other people.
- Strongly Disagree

³⁸ The next set of 18 questions included the Aggression subscale of the CBCL, which is under copyright protection and cannot be reprinted here.

³⁹ The following 10 questions are from the Social Provision Scale – Short (Russell & Cutrona, 1984).

- Disagree
 - Agree
 - Strongly Agree
- 111)** 3) There is no one I can turn to for guidance in times of stress.
- Strongly Disagree
 - Disagree
 - Agree
 - Strongly Agree
- 112)** 4) There are people who enjoy the same social activities I do.
- Strongly Disagree
 - Disagree
 - Agree
 - Strongly Agree
- 113)** 5) I do not think other people respect my skills and abilities.
- Strongly Disagree
 - Disagree
 - Agree
 - Strongly Agree
- 114)** 6) If something went wrong, no one would come to my assistance.
- Strongly Disagree
 - Disagree
 - Agree
 - Strongly Agree
- 115)** 7) I have close relationships that provide me with a sense of emotional security and well-being.
- Strongly Disagree
 - Disagree
 - Agree
 - Strongly Agree
- 116)** 8) I have relationships where my competence and skills are recognized.
- Strongly Disagree
 - Disagree
 - Agree
 - Strongly Agree
- 117)** 9) There is no one who shares my interests and concerns.
- Strongly Disagree
 - Disagree

- Agree
- Strongly Agree

118) 10) There is a trustworthy person I could turn to for advice if i were having problems.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

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[Conners 3 ADHD Index]⁴¹

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⁴⁰ The next set of 40 questions included the SCQ, Current form (Rutter, Bailey, Lord, & Pickles, 2003), which is under copyright protection and cannot be reprinted here.

⁴¹ The next set of 10 questions included the Conners ADHD Index – Parent (Conners, 2008), which is under copyright protection and cannot be reprinted here.

⁴² The next set of 36 questions included the Parenting Stress Index, Short Form (Abidin, 1995), which is under copyright protection and cannot be reprinted here.

- 205)** 1) Do you think *most people* believe that Attention-Deficit/Hyperactivity Disorder (ADHD or ADD) is overdiagnosed in the United States?
- Yes
 - No
 - Unsure
- 206)** 2) Do *you* believe that Attention-Deficit/Hyperactivity Disorder (ADHD or ADD) is overdiagnosed in the United States?
- Yes
 - No
 - Unsure
- 207)** 3) To what extent do you think Attention-Deficit/Hyperactivity Disorder (ADHD or ADD) is a biologically-based disorder?
- Completely biologically-based
 - Mostly biologically-based
 - Somewhat biologically-based
 - A little biologically-based
 - No biological basis
- 208)** 4) Do you think *most people* believe that autism spectrum disorder is overdiagnosed in the United States?
- Yes
 - No
 - Unsure
- 209)** 5) Do *you* believe that autism spectrum disorder is overdiagnosed in the United States?
- Yes
 - No
 - Unsure
- 210)** 6) To what extent do you think autism spectrum disorder is a biologically-based disorder?
- Completely biologically-based
 - Mostly biologically-based
 - Somewhat biologically-based
 - A little biologically-based
 - No biological basis

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- 211)** 7) Do you ever feel responsible or guilty because you believe that you are not doing as much for your child as you think you should be doing?
- No⁴³
 - Yes⁴⁴
- 212)** 8) How often do you feel this way?
- Every day or almost every day
 - Weekly
 - Monthly
 - Four to eleven times a year
 - Less than four times a year

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Thank you so much for your participation in this project!

We greatly appreciate the time you took to complete this questionnaire and your willingness to participate in research.

- 213)** We are interested in how our participants have heard about this project. Could you please tell us briefly how you heard about this research study?
-

- 214)** As a token of our appreciation for your participation, we would like to give you the opportunity to be entered into a drawing for a \$100 gift card.

Would you like to be entered for this drawing? Please note, if you are interested in the drawing, we will ask you for your contact information; however, that information will NOT be linked to the previous information that you have just provided for us.

- No, thank you⁴⁵
- Yes, please⁴⁶

⁴³ Participants were automatically directed to the next page.

⁴⁴ Participants were automatically directed to question #212.

⁴⁵ Participants were automatically directed to the next page.

⁴⁶ Participants were automatically directed to the Raffle Form page.

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Thank you!

Raffle Form for Mothers' Experiences of Parenting Study

Thank you for your participation in the study entitled *Mothers' Experiences of Parenting: Yourself, Others, & Your Child*. This study seeks to better understand what factors impact how mothers feel effective in regards to their parenting.

If you would like to be entered into a raffle to win one of three \$100 Visa gift cards, please provide your name (first name is fine) & an e-mail address and/or phone number below. **Please keep in mind that a member of the study team will contact you so that you can be compensated if you win.**

215) 1) Your name: _____

216) 2) Your e-mail address: _____

217) 3) Your phone number: _____

Thank you!

APPENDIX B

SUPPLEMENTAL ANALYSES FOR DETERMINING POTENTIAL COVARIATES

Child's Age & Mother's Age

Child's age. Child's average age differed among the diagnostic groups ($F = 4.48$, $partial\ eta^2 = .048$, $p = .013$), with typically developing children (mean = 8.11 years) significantly younger than children with ADHD (mean = 9.01 years; $p = .01$). There were not significant differences between the ASD group (mean = 8.43 years) and the other diagnostic groups. Bivariate correlations between child's age and the other independent, dependent, mediation, or moderator variables were not significant. Therefore, child's age was not included as a covariate for hypothesis analyses.

Mother's age. There was a small and negative significant relationship between the mother's age variable and child problem behaviors ($r = -0.177$, $p = .022$), based on bivariate correlation analyses. In other words, mothers who were older reported less behavioral problems for their children. Because mother's age did not have significant relationships with any of the other study's variables, mother's age was not included as a covariate for hypothesis analyses.

Mother's Relationship Status

For the covariate determination analyses, mother's relationship status was converted into a dichotomous variable: (a) married/cohabiting ($n = 125$) and (b) single/separated/divorced/widowed ($n = 55$). Mother's relationship status did not have significant relationships with any of the study's variables.

Socioeconomic Status: Financial Situation and Household Income

Household income.⁴⁷ For the covariate determination analyses, household income was categorized at \$25,000 intervals, yielding five interval levels: (a) \$0-\$25,000 ($n=21$), (b) \$25,000-\$50,000 ($n=48$), (c) \$50,000-\$75,000 ($n=29$), (d) \$75,000-\$100,000 ($n=28$), and (e) above \$100,000 ($n=53$). Household income did not differ based on diagnostic category. According to bivariate correlation analysis, there was a small and positive relationship between the household income and social support ($r=0.17$, $p=.027$). This finding indicated that mothers who reported greater levels of social support had higher household incomes, and also felt they had more than enough necessities and some luxuries. There was also a small and negative relationship between the child problem behaviors and household income based on bivariate correlation analysis ($r = -0.16$, $p=.034$). In other words, mothers with a higher household income reported less problem behaviors for their children. Although these relationships were found to be significant, effect sizes were determined to be too small to warrant using household income as a covariate in hypothesis tests.

Financial situation.⁴⁸ For the covariate determination analyses, financial situation was categorized at four levels by combining “*routinely unable to purchase sufficient food or other basic necessities*” ($n = 10$) and “*occasionally unable to purchase sufficient food or other basic necessities*” ($n = 16$) so that all the categories would be similar in terms of sample size. The other three categories were “*sometimes worried about having enough money for the necessities*” ($n = 77$), “*never worried about having*

⁴⁷ One participant from the ADHD group had missing data for this variable.

⁴⁸ One participant from the ASD group and one participant from the ADHD group had missing data for this variable.

enough money for the necessities” ($n = 46$), and “*have more than enough* money for necessities and some luxuries” ($n = 29$).

A chi-square analysis showed a significant relationship between financial situation and diagnostic group (Pearson Chi-Square=21.57, $p < .001$; see Table B1). This data suggests that the ASD group were more likely to report being routinely or occasionally unable to purchase sufficient food or other basic necessities, compared to the ADHD group and the Typical group. Additionally, the ASD group appears to have had fewer participants who reported having more than enough money for necessities and some luxuries, compared to the other two groups. It is notable that the ASD group did not differ from the other diagnostic groups in regards to family income, but they did feel more financially strained. It is possible that there are more financial demands (e.g., therapies for child, costly child-care assistance) for children with ASD than for children with ADHD or typically developing children.

Table B1
Chi-Square Analysis for Diagnostic Group by Financial Situation

Financial Situation	ASD		ADHD		Typically Developing	
	Total	Percentage within group	Total	Percentage within group	Total	Percentage within group
Routinely or Occasionally Unable . . .	21	28.0%	1	2.0%	4	7.4%
Sometimes Worried . . .	29	38.7%	25	51.0%	23	42.6%
Never Worried . . .	18	24.0%	13	26.5%	15	27.8%
Have More Than Enough . . .	7	9.3%	10	20.4%	12	22.2%

Mothers who had more than enough resources also reported a higher sense of social support, compared to mothers who were worried about their resources or who did not have enough resources. This finding was based on One-Way ANOVA analyses: the Social Provision Scale (SPS) differed significantly based on financial situation categories ($F=5.04$, $partial\ eta^2=0.080$, $p=.002$). Post Hoc Tukey HSD tests showed that compared to participants who reported having *more than enough* for necessities and some luxuries, (a) participants who *sometimes were worried* about having enough money for the necessities ($p=.015$) and (b) participants who *routinely or occasionally were unable* to purchase sufficient food or other basic necessities ($p=.003$) reported less social support. These findings were also congruent with diagnostic group differences, as mothers of children with ASD reported lower levels of social support compared to the other groups, in addition to having insufficient financial resources. It is possible that financial resources allows an individual to have more flexibility and time to form connections with other people, that would subsequently bolster one’s sense of social support. Although the relationship between social support and financial situation was significant, the effect size

was not particularly strong, and for this reason financial situation was not used a covariate.

Child's Siblings

Number of siblings. There were significant differences in number of siblings among the diagnostic groups ($F = 3.48$, $partial\ eta^2 = .038$, $p = .033$): the ASD group had significantly more siblings (mean=1.43) compared the ADHD group (mean=0.98, $p = .044$). There were not significant differences between the Typical group (mean=1.07) and the other diagnostic groups. Number of siblings was also related to child problem behaviors ($r = 0.21$, $p = .005$), indicating the children with more siblings often displayed more problem behaviors.

To determine whether number of siblings impacted child problem behaviors independently from diagnostic group, a two-way ANOVA was conducted examining how child problem behaviors differed based on (a) number of siblings and (b) diagnostic group. In order to accommodate the ANOVA analysis, the number of siblings variable was converted from an interval variable into a categorical variable with three categories: (a) no siblings ($n = 46$), (b) one sibling ($n = 77$), and (c) more than one sibling ($n = 56$). The ANOVA was significant ($F = 10.86$, $p < .001$), and child problem behaviors differed by diagnostic group ($partial\ eta^2 = .29$, $p < .001$), but number of siblings was no longer a significant variable. The interaction effect was also non-significant. Based on this analysis, number of siblings was not used as a covariate in hypothesis tests.

Diagnosis of siblings. Diagnosis of siblings was related to diagnostic group (Pearson Chi-Square=10.01, $p = .007$): the ASD group appeared more likely to have a

sibling with either ASD or ADHD compared the ADHD group or the Typical group (See Table B2). Diagnosis of siblings was not significantly related to any other study variables, and so diagnosis of siblings was not used as a covariate in hypothesis tests.

Table B2
Chi-Square Analysis for Diagnostic Group by Diagnosis of Siblings

Diagnosis of sibling	ASD		ADHD		Typically Developing	
	Total	Percentage within group	Total	Percentage within group	Total	Percentage within group
At least one sibling has ASD or ADHD	21	27.6%	5	10.0%	5	9.3%

State of residence

State of residence was converted into a dichotomous variable for covariate determination analyses, whereby participants were categorized into being Massachusetts residents ($n=78$) or non-Massachusetts residents ($n=102$). Based on chi-square analysis, state of residence was shown to be significantly related to diagnostic group (Pearson Chi-Square=44.92, $p<.001$), with participants from the Typical group appearing more likely to be from Massachusetts (see Table B3).

Table B3
Chi-Square Analysis for Diagnostic Group by State of Residence

State of Residence	ASD		ADHD		Typically Developing	
	Total	Percentage within group	Total	Percentage within group	Total	Percentage within group
Massachusetts Residents	16	21.1%	19	38.0%	43	79.6%

State of residence also had a significant influence on perceived stigma ($t=3.80$, $p<.001$), child problem behaviors ($t=4.82$, $p<.001$), maternal stress ($t=4.20$, $p<.001$), and social support ($t=-2.29$, $p=.023$). However, when Two-Way ANOVA analyses were

conducted to assess how perceived stigma, child problem behaviors, maternal stress, and social support each differed based on state of residence and diagnostic group, diagnostic group retained a significant influence and state of residence no longer had influence. The interaction effect was also not significant in these analyses. Based on these findings, state of residence was not used as a covariate for analyses.

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