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Lindsey Devries

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THE ROLE OF CHILD CHARACTERISTICS, PARENTAL SELF-EFFICACY, AND
SOCIAL SUPPORT ON PARENTAL STRESS IN MOTHERS AND FATHERS OF
CHILDREN WITH AUTISM SPECTRUM DISORDERS

by

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A Dissertation

Submitted to the Graduate Faculty

of the

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for the degree of

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2016

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Lindsey DeVries
April 26, 2016

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ABSTRACT

Although parents of any child experience stress related to child rearing, parents of children with autism spectrum disorder (ASD) are especially prone to parenting stress. The purpose of this study was to examine the relationship that child characteristics (symptom severity, adaptive behavior, and problem behaviors), parental self-efficacy, and social support have on parenting stress in mothers and fathers of children with an ASD. Participants included mothers ($n= 26$) and fathers ($n=18$) of children ages 3 to 24 years in age with a diagnosis of ASD. Maternal and paternal participants completed measures of symptom severity (GARS-3; Gilliam, 2013), adaptive and problem behaviors (BASC-2-PRS; Reynolds & Kamphaus, 2004), parental self-efficacy (PSOCS; Gibaud-Wallston & Wandersman, 1978), perceived social support (FSS; Dunst et al., 1984), and parental stress (PSI-SF; Abidin, 1995) to better clarify the relationship between the aforementioned variables. Pearson's correlations indicated that parental self-efficacy and child problem behaviors were strongly correlated with parental stress in both mothers and fathers of children with ASDs. Furthermore, the results of a oneway-ANOVA revealed significant differences between parental stress levels ($F(1, 42)= 5.74, p<.05$) and child problem behaviors ($F(1, 42)= 6.79, p<.05$) between mothers and fathers; with mothers reporting experiencing significantly greater parental stress and child problem behaviors than fathers. Problem behaviors were the only child characteristic that was a significant predictor of parental stress ($r^2 = 0.151, p<.01$). Mediation and moderation analyses found

that parental self-efficacy was also found to be a significant predictor of parental stress in mothers (38% variance), fathers (60% variance), and both parents (52.3% variance). No mediating or moderating factors were identified. Implications for practice, limitations, and directions for future research are discussed.

Keywords: autism spectrum disorders, parent stress, parent self-efficacy, problem behaviors, symptom severity, perceived social support

CHAPTER I

INTRODUCTION

Mothers and fathers of any child are likely to experience stress related to parenting at some point in time (Deater-Deckard, 1998; Deater-Deckard, 2004). However, children with disabilities present unique challenges and increased care demands that are likely to magnify parental stress compared to their non-disabled peers (Dyson, 1997). Children with Autism Spectrum Disorders (ASDs) have been linked to high levels of parental stress compared to other children (Weiss, 2002; Koegel et al., 1992; Boyce, Behl, Mortensen, & Akers, 1991; Hauser-Cram, Warfield, Shonkoff, & Krauss, 2001; Sanders & Morgan, 1997; Dabrowska & Pisula, 2010; Griffith, Hastings, Nash, & Hill, 2010; Estes et al., 2009; Bouma & Schweitzer, 1990; Schieve, Blumberg, Rice, Visser, & Boyle, 2007). Although ASDs are gaining more attention in the media and scientific community, relatively little is known about the factors that contribute to parental stress of both mothers and fathers of children with ASDs (Johnson & Simpson, 2013). This study attempts to address this gap in the literature.

To better understand the justification for the current study, this section begins by exploring the background and critical need for this research. This is followed by a brief discussion of the variables of interest. Specifically, how child symptom severity, adaptive behavior, and problem behaviors, as well as parental self-efficacy and perceived social support, contribute to parental stress. Additionally, the limitations of the current research

examining these variables and the means that this study strives to address said gaps are discussed. Finally, the specific purpose of the present study is delineated.

Background and Need

Over the past several decades the prevalence of Autism Spectrum Disorders (ASDs) has increased substantially. The Center for Disease Control and Prevention (2014) has estimated that approximately 1 in 68 children are affected by an ASD and that this overall population has increased by at least 78% in the past decade. Past research has revealed that having a child with an ASD uniquely challenges families in a variety of ways. Specifically, parents of children with ASDs have repeatedly reported experiencing more stress than parents of children with other disabilities (Sanders & Morgan, 1997; Dabrowska & Pisula, 2010; Griffith et al., 2010; Estes et al., 2009; Bouma & Schweitzer, 1990) as well as parents of typically developing children (Weiss, 2002; Koegel et al., 1992; Boyce, Behl, Mortensen, & Akers, 1991; Hauser-Cram, Warfield, Shonkoff, & Krauss, 2001). These elevated levels of stress can predispose parents of children with ASDs to higher rates of psychological and physical health issues (Carpenter & Steffen, 2004; Olsson & Hwang, 2001; Abbeduto, Seltzer, Shattuck, Krauss, Orsmond, & Murphy, 2004; Hastings, 2003), which may, in turn, influence their parenting skills and child's development (Coleman & Karraker, 1997). Additionally, heightened levels of stress have also been related to child behavior problems (Estes et al., 2009; Lai, 2013; Lecavalier, Leone, & Wiltz, 2006; Plant & Sanders, 2007; Tomanik, Harris, & Hawkins, 2004), adaptive behavior (Fitzgerald, Birkbeck, & Matthews, 2002; Tomanik et al., 2004; Hall & Graff, 2011), and child symptom severity (Lyons, Leon, Roecker Phelps, & Dunleavy, 2010; Ingersoll & Hambrick, 2011). However, the simultaneous effects of

these three types of characteristics on parental stress have remained largely unknown and existing studies of these concepts have been extremely limited.

To the author's knowledge, the only study thus far to examine similar constructs was a dissertation by Lai (2013). In this study, the author examined child characteristics such as symptom severity, adaptive behavior skills, and problem behaviors, in addition to parental self-efficacy and perceived social support, in relation to parental stress of children with ASDs in Taiwan. The results of this study illustrated that self-efficacy, perceived social support, and problem behaviors were the largest predictors of parental stress. Parental self-efficacy and perceived social support were both partial mediators of parenting stress. There were several limitations noted in this study. First, similar to other ASD research, this study was primarily composed of mothers ($N = 73$) and lacked sufficient input from fathers ($N = 6$). Children that only had a diagnosis of "autistic disorder" were included in this study, which may have also impacted the degree to which child characteristics contributed to parental stress. Additionally, data regarding child characteristics was largely collected through interview techniques that lacked interrater reliability and may be susceptible to desirability effects. Lastly, the results may only be applicable to Taiwanese families and lack generalizability to American mothers and fathers. It may be possible that cultural differences, as well as added resources dedicated to ASDs in the United States, would modify how parents perceive the amounts of social support available to them or their parental self-efficacy.

As Lai (2013) notes, relatively little is known regarding how mothers and fathers evaluate their parenting abilities and experience their child's unique characteristics, despite the link between high levels of parental stress and caring for children with ASDs

being repeatedly verified throughout the literature. These parental beliefs and behaviors may be especially informative in better understanding how to assist families of children with ASDs. Bandura's (1977) seminal research in self-efficacy contended that an individual's perceptions can greatly influence not only their performance on a task, but also their perceptions of themselves. Furthermore, research has illustrated that stress can negatively influence a parent's ability to engage in parenting behaviors and intensify depressive symptoms (Ardelt & Eccles, 2001; Scheel & Rieckmann, 1998; Jones & Prinz, 2005). Some researchers have noted that parental self-efficacy is an especially important topic of exploration within this population given the unique experience of raising a child with an ASD (Karst & Van Hecke, 2012). This is because self-efficacy can be instrumental in assisting parents in engaging in positive parenting practices when faced with child problem behaviors (Jones & Prinz, 2005) that may occur more frequently in children with ASDs. Furthermore, the high demands of caretaking, plethora of information, and large magnitude of interventions often sought out by parents of children with ASDs can be overwhelming, taxing on parental resources and cause parents to doubt their decisions (Karst & Van Hecke, 2012; Mackintosh, Goin-Kochel, & Myers, 2012). Additionally, deficits in core characteristics such as social skills and communication can cause parents to be uncertain of their ability to assess their child's needs and wants due to impairments in the child's ability to express these needs and wants in a typical manner (Karst & Van Hecke, 2012).

The exact role that parental self-efficacy plays in mothers and fathers of children with ASDs remains unclear, due partially to the lack of empirical research (Karst & Van Hecke, 2012). Of the existing research, it appears that parental self-efficacy differs

between mothers and fathers of children with ASDs. Research by Hastings and Brown (2002) found that self-efficacy functioned as a mediator between child behavior problems and maternal depression and anxiety but as a moderator of child misbehavior and parental anxiety. Sofronoff and Farbotko (2002) also found gender differences in parental self-efficacy among parents of children diagnosed with Asperger's after participating in a workshop that targeted problem behaviors in children with ASDs, with mothers reporting significantly higher levels of self-efficacy than fathers. The limited research conducted thus far also suggests that parental self-efficacy is likely a mediator of parental stress and parent psychological well-being (Lai, 2013; Hastings & Brown, 2002; Rezendes & Scarpa, 2011). However, this scant amount of research overwhelmingly focuses on mothers and only accounts for child behavior problems in relation to the role of parental self-efficacy.

The paucity of the parental self-efficacy research on parents of children with ASDs also extends to research on its influence on the ways that mothers or fathers perceive the availability of coping resources, such as social support. Although social support has been identified as a potential mediator (Cutrona & Troutman, 1986) and moderator (Plant & Sanders, 2007) of parent psychological well-being and stress, respectively; this relationship has yet to be explored as it relates to parental self-efficacy and stress. Given the well-articulated relationships between social support and stress in parents of children with ASDs (Tunali & Power, 2002; Weiss, 2002; Benson, 2006; Luther, Canham, & Cureton, 2005; Siklos & Kerns, 2006), it may be possible that this relationship is only partially capturing the difficulties that parents are experiencing.

Clarifying the nature of this relationship may be especially helpful in formulating interventions to better support families of children with ASDs.

Although the indirect relationships between social support and parental stress have received little attention in the literature, there are several aspects of the direct influence of social support on stress of parents of children with ASDs. Positive perceptions of social support have been linked to improved well-being and diminished levels of reported stress (Norris & Kaniasty, 1996) but are only somewhat understood in parents of children with ASDs, especially fathers (Little, 2002). This may be especially relevant to parents of children with ASDs who tend to report having few available sources of social support (Meadan, Halle, & Ebata, 2010), despite the overwhelming evidence of the utility of social support in assuaging stress in mothers and fathers of children with ASDs (Dunn, Burbine, Bowers, & Tantleff-Dunn, 2001; Boyd, 2002; Weiss, 2002; Bromley, Hare, Davison, & Emerson, 2004; Tway, Connolly, & Novak, 2007; Ekas, Lickenbrock, & Whitman, 2010).

Furthermore, research that examines ASDs and fathers of children with ASDs is quite limited (Johnson & Simpson, 2013). Although mothers may have historically held more caretaking responsibilities of their child in the past, increasingly fathers are taking on a more active parenting role (Parker & Wang, 2013). Nevertheless, compared to mothers of children with ASDs, research examining fathers is scarce. The limited research that has examined fathers of children with ASDs has primarily focused solely on the experience of stress. Unfortunately, these results are also in disagreement. Specifically, some researchers have found no difference in maternal and paternal self-reports of stress (Benson, 2006; Hastings, Kovshoff, Ward, Espinosa, Brown, &

Remington, 2005; Davis & Carter, 2008), whereas others have found that mothers report experiencing significantly more stress than fathers (Hastings, 2003; Herring, Gray, Taffe, Tonge, Sweeney, & Einfeld, 2006; Little, 2002). Clearly, deeper exploration of these experiences is needed to better understand the experiences of a father with a son or daughter with an ASD.

Purpose

The purpose of this study is to examine the relationship that child characteristics (symptom severity, adaptive behavior, and problem behaviors), parental self-efficacy, and social support have on parenting stress in mothers and fathers of children with an ASD. Furthermore, this study seeks to further clarify the role that parental self-efficacy and social support have in parental stress as mediators or moderators given the aforementioned child characteristics. This study will also examine the differences in how mothers and fathers perceive child characteristics, self-efficacy, and social support in relation to their relative experiences of parental stress. Finally, this study will also examine the role of social support as a mediator or moderator of parental self-efficacy and stress in mothers and fathers. Clarification of these research questions can uncover valuable information to practitioners and families of children with ASDs in ways to better understand and treat parental stress.

CHAPTER II

LITERATURE REVIEW

The literature review addresses six primary aspects of the relevant research. First, a review of Autism Spectrum Disorders (ASDs) is provided to provide the reader with relevant background information regarding this population. Next, parental stress is discussed both theoretically and in terms of how it applies specifically to parents of children with ASDs. The third section of the literature review focuses on the major models of social support and the role that it plays in the well-being of parents of children with ASDs. A discussion of parental self-efficacy and the research pertaining to parents of children with ASDs follows this section. The fifth section explores gender differences of parents of children with ASDs in regards to experienced stress, perceived social support, and parental self-efficacy. Lastly, the rationale and research questions of this study are presented.

Autism Spectrum Disorders

Autism spectrum disorder (ASD) is a neurological brain disorder that is characterized by deficits in socialization skills, communication difficulties, and repetitive and stereotyped movements in varying degrees of impairment (American Psychiatric Association, 1994). This spectrum of symptoms was comprised of five distinct categories within the Pervasive Developmental Disorders umbrella put forth by the DSM-IV-TR. These categories include autistic disorder, Asperger's Disorder, Pervasive Developmental

Disorder Not Otherwise Specified (PDD-NOS), Childhood Disintegrative Disorder, and Rett Syndrome (American Psychiatric Association, 1994). The most recent version of the Diagnostic and Statistical Manual (DSM-V) has condensed the breadth of these diagnoses, eliminating Childhood Disintegrative Disorder, Rett Syndrome, PDD-NOS, and Asperger's Disorder, and replaced it with the overarching diagnosis of autism spectrum disorders (ASDs) (American Psychiatric Association, 2013). For the purpose of this study, I will be referring to individuals with diagnoses of autistic disorder, Asperger's Disorder, and PDD-NOS and referring to these categories as autism spectrum disorders (ASDs).

Several reasons support this parameterization. First, Rett Syndrome has been linked to a specific genetic variation that has a distinct marker from other diagnoses included under the auspices of Pervasive Developmental Disorders (Rutter, 2013). Additionally, the validity of Childhood Disintegrative Disorder as a separate diagnosis from autistic disorder has been questioned (Rogers, 2004; Rutter, 2013). Although Asperger's has also been recently eliminated from the DSM-V as a distinct clinical profile, this author feels that the heated debate surrounding this exclusion (Carmack, 2013) in addition to its heavy presence in the literature supports its usage. Lastly, the literature overwhelmingly utilizes the same diagnoses (autism, Asperger's, and PDD-NOS) under the auspices of ASDs to investigate similar constructs to the topics of interest in this study (e.g., Rezendes & Scarpa, 2011; LeCavalier et al., 2006; Smith, Greenberg, & Seltzer, 2012; Klin, Saulnier, Sparrow, Cicchetti, Volkmar, & Lord, 2007). To comprise a more robust and encompassing literature review it is necessary to examine

research that has included more heterogeneous diagnoses within their conceptualization of ASDs.

ASDs are estimated to affect an estimated 1 in 88 live births in the United States (Center for Disease Control and Prevention, 2012). However, recent research has suggested that prevalence rates may be rising (CDC, 2012; Fombonne, 2003; Kim et al, 2011; Yeargin-Allsopp, Rice, Karapurkar, Doernberg, Boyle, & Murphy, 2003), suggesting that a burgeoning number of children with ASDs and their families are requiring support in coping with this disorder. Despite this growth, the factors that contribute to the experiences of mothers and fathers of children with autism and the stress that they experience are still largely unknown. Thus, this study will focus on parental stress and its correlates for parents of children with ASDs.

Parental Stress

Although all individuals experience stress to a certain extent, excessive stress can negatively impact well-being in a variety of ways. The physiological response of the body experiencing stress can result in elevations in blood pressure, fatigue, immune suppression, and ulcers (Carpenter & Steffen, 2004). Psychological reactions to stress can also have significant effects. For example, increased levels of anxiety can negatively impact sleep hygiene, concentration, eating habits, and mood. Additionally, mood disturbances can manifest as depressive symptoms (e.g., loss in pleasure, feelings of worthlessness, and suicidal ideation) and may intensify the aforementioned physiological responses (American Psychiatric Association, 2013).

The practice of parenting is inherently riddled with stressful events. Deater-Deckard (2004) defines parenting stress as “a set of processes that lead to aversive

psychological and physiological reactions arising from attempts to adapt to the demands of parenthood” (p. 6). Although stress in parenting is ubiquitous to some extent, the degree to which the stress impacts the well-being of the parent and the family can vary widely in degree, intensity, and duration based on a number of factors (e.g., individual characteristics of the parents, coping resources, individual characteristics of the child, etc.)(Deater-Deckard, 2004). The commonality of parenting stress should not undermine the effects that it can have on physiological and psychological well-being. Depression, fatigue, irritability, anxiety, and increased risk for ulcers and heart attacks are only a subset of the symptoms that can be manifested due to parental stress (Carpenter & Steffen, 2004). Furthermore, mitigating the effects of stress on parents can also increase the efficacy of interventions that their children are receiving (Osborne, McHugh, Saunders, & Reed, 2008), bolster the warmth of the parent-child relationship (Deater-Deckard, 1998), and increase marital satisfaction (Brobst, Clopton, & Hendrick, 2009).

Models of Parental Stress

The complexity of parental stress has spurred the development of several models as a means of better ascertaining the unique role that stress has in parenting. One popular framework for understanding stress and coping in families of children with disabilities (Sloper, 1999), is Lazarus’ Transactional Model of Stress and Coping (Lazarus & Folkman, 1984). According to this model, stress is defined as “a relationship between the person and the environment that is appraised by the person as relevant to his or her well-being and in which the person’s resources are taxed or exceeded” (Folkman & Lazarus, 1985, p. 152). Stress, within this model, is a subjective experience that can vary widely between individuals depending on their appraisal or perception of the event (Lazarus &

Folkman, 1987). The appraisals that an individual makes can be influenced by individual characteristics (e.g., gender) and various resources available to that person. A situation is initially appraised to determine whether or not it is threatening and which resources the person possesses to cope with this event. When a situation is deemed threatening and resources are perceived to be inadequate, a person experiences a variety of cognitive, affective, and coping behaviors (Lyon, 2000).

Despite its popularity, Hassall, Rose, and McDonald (2005) noted that there are several critiques of the Transactional Model of Stress and Coping model. First, the theorists fail to adequately account for influences outside of the individual, such as child characteristics, that may contribute to the appraisal of the situation and resources available to cope with a perceived stressor. Furthermore, specific cognitive factors that may influence the appraisal process by parents are neglected in this model. Parental cognitive factors, such as self-efficacy, have demonstrated a significant role in predicting parent stress in parents of children with disabilities (Hassall, Rose, & McDonald, 2005; Hastings & Brown, 2002; Karst & Van Hecke, 2012). Lastly, there is a lack of research utilizing this model that analyzes how parents of children with disabilities may conceptualize various child characteristics and available resources within the appraisal process. The interplay within of these factors could very well yield useful information regarding parental experiences of stress and the utility of the coping mechanisms they chose to utilize.

Other models have attempted to better account for the interaction of a multitude of factors in the experience of parental stress. Belsky's (1984) process model contends that parenting is influenced primarily by three dominant forces: a) personality/well-being

of the parent, b) the individual traits of the child, and c) the context in which these interactions take place. This model also posits that these forces are interactional and can mutually influence the well-being or outcome of the other forces present. Although this can be a protective factor for parents with numerous resources (e.g., knowledge, parenting competency, and psychological well-being) it can be detrimental for those who lack such commodities.

Other scholars have suggested that Belsky's process model may be too simplistic in describing the interactions among the influences within families that effect stress. For example, McCubbin and Patterson (1983) proposed the double ABCX model of family stress and adaptation as a means of explaining the nuances of how various factors interact when a family is faced with a crisis. The authors theorize that families rarely encounter and resolve a single stressor, but rather stressors tend to accumulate. Families are consequently faced with various hardships that relate to the stressor or exacerbate more latent problems that existed prior to the stressor occurring and result in ambiguity regarding the structure and future of the family. As a result, families may call on existing resources to cope with the stressor or seek to obtain new resources as a means of meeting these demands. Ultimately, the family's perception and interpretation of the stressful situation interacts with the aforementioned dimensions and translate into the family's adaptive coping.

Different from Hill's (1949, 1958) original ABCX crisis model, McCubbin and Patterson (1983) contended that several systems interact when a family is attempting to cope in an adaptive way. Specifically, each member functions within the family which functions within the community that the family belongs to. When faced with crisis, the

family's adaptation takes precedent and strives to achieve harmony at both the individual-family level and the family-community level. If balance is not achieved, the family system attempts to shift in the form of restructuring roles and the way the family functions. Awareness of this restructuring is brought to the consciousness of the family by a member and the unit strives to achieve a sound fit between the former way of functioning and the current, novel means of functioning. The adaptation that occur exists on a continuum of lacking congruence between the member, family, and community systems (adaptive) or harmonious interactions within all three levels (bonadaptive). This process can be ongoing and may eventually lead towards exhaustion, or an inability or choice to cease further attempts to rectify the crisis.

Several studies have been conducted on a variety of populations to test the double ABCX Model within families who have a member with a disability. Families including individuals with intellectual disabilities (Saloviita, Itälina, & Leinonen, 2003), physical disabilities (Florian & Dangoor, 1994), and autism (Hall & Graff, 2011; Tobing & Glenwick, 2006; Bristol, 1987) have all been studied through the lens of this model. However, these studies have only studied limited aspects of child characteristics (e.g., adaptive behavior) within the context of the model rather than the amalgamation of factors (e.g., problem behaviors, severity of diagnosis, and adaptive behavior) that have been directly related to parental stress in mothers and fathers of those with ASDs. Furthermore, research within this population typically examines one resource that may affect stress levels (e.g., parent competence) rather than the influence of several aspects of perceived internal resources (e.g., parent self-efficacy and perceived social support).

The current study seeks to better understand the relationship between a variety of child characteristics germane to those with ASDs (e.g., problem behaviors, severity of diagnosis, and adaptive behavior), parental self-efficacy, perceived social support, and parental stress by utilizing the double ABCX model as a conceptual guide. Three aspects of the double ABCX model were assessed in this research: “Aa”, Family Demands: Pile-up; “Bb”, Family Adaptive Resources; and “Cc”, Family Definition and Meaning. Specifically, the child’s problem behaviors, severity of diagnosis, and adaptive behavior characteristics were viewed as the Aa factor and parental self-efficacy and perceived social support were conceptualized as the Bb factor. Lastly, parental stress was considered as the Cc factor.

Parental Stress in Parents of Children with ASDs

Parenting stress may possibly be one of the most frequently explored factors in families of children who have autism (Davis & Carter, 2008). Research has consistently indicated that parents of children with an ASD experience heightened levels of stress compared to parents who do not have a child with autism (Koegel et al., 1992; Boyce, Behl, Mortensen, & Akers, 1991; Hauser-Cram, Warfield, Shonkoff, & Krauss, 2001; Weiss, 2002). Moreover, evidence also suggests that families with a member with autism experience more stress than families who have members with other disabilities such as Down Syndrome (Sanders & Morgan, 1997; Dabrowska & Pisula, 2010; Griffith et al., 2010), developmental delays (Estes et al., 2009), and cystic fibrosis (Bouma & Schweitzer, 1990).

These excessive levels of stress have also been uniquely linked to various mental health symptoms for parents of children with an ASD. Research has found that

significantly higher rates of depression and anxiety symptoms in mothers of children with ASDs compared to mothers of neurotypical children or children with other disabilities (Olsson & Hwang, 2001; Abbeduto et al., 2004; Hastings, 2003). Unfortunately, this is not an anomaly among parents of children with an ASD. Some studies have found that nearly half of their sample report significant anxiety symptoms and close to two-thirds of their parent sample meet the criteria for clinical depression (Bitsika & Sharpley, 2004). Similar to stress levels, these rates of anxiety and depression are also higher for parents of children with ASDs when compared to parents of children with other disabilities (Abbeduto et al., 2004) and the normative population of parents (Bitsika & Sharpley, 2004). Other incidences of psychopathology in parents of children with ASDs have been less clear but still evident. For example, parents of children with ASDs had more thought disorders than parents of neurotypical children but not parents of children with psychiatric disorders (Yirmiya & Shaked, 2005).

Evidence also indicates that in conjunction to mental health disturbances, parents of children with ASDs may also be at an increased risk for physical health issues. Mothers and fathers of children with ASDs have both been found to have poorer quality and quantity of sleep compared to parents of neurotypical children (Meltzer, 2008; Lopez-Wagner, Hoffman, Sweeney, Hodge, & Gilliam, 2008). Research has also confirmed differences in health-related quality of life in parents of children with autism compared to other parents (Allik, Larsson, & Smedje, 2006; Mugno, Ruta, D'Arrigo, & Mazzone, 2007). These differences were especially pronounced for mothers of children with autism. That is, they were more significantly more likely to view their physical well-

being as being poor in quality compared to fathers of children with ASDs, mothers of children with other disabilities, or mothers of typically developing children.

It is largely unknown whether or not these physical health issues are due to genetic variations that are related to the child's ASD or environmental factors (Khanna, Madhavan, Smith, Patrick, Tworek, & Becker-Cottrill, 2011). Despite the ambiguity regarding the origins of these problems, other aspects of well-being are also negatively impacted for parents of children with ASDs. Parents of children with ASDs have been found to have more limited friendships than parents of children with Down Syndrome (Piven, Palmer, Landa, Santangelo, Jacobi, & Childress, 1997). Additionally, the small amount of research that examines marital relationships between parents of children with a child who has an ASD also indicates that these parents may experience less marital satisfaction and family cohesion than parents of non-affected children (Meadan, Halle, & Ebata, 2010; Higgins, Bailey, & Pearce, 2005).

The amalgamation of the aforementioned outcomes related to parenting a child with an ASD can be undeniably linked to heightened levels of stress. However, the specific factors of a child's diagnosis that contribute to parental stress are quite varied. The multifarious nature of ASDs has led many researchers to examine specific characteristics of ASDs that may exacerbate parental stress more closely. The current study seeks to better understand the influences on parental stress in mothers and fathers of children with ASDs as a means of better predicting stress outcomes for these individuals.

Factors of ASD that influence parental stress. There is debate as to which aspects of parenting a child with an ASD contribute to inducing stress symptoms. Research has indicated that various core and subsidiary characteristics of ASDs may play critical roles in determining parental stress levels. Some scholars speculate that the nature of ASDs may be uniquely difficult for parents because challenges in social-communication and odd behaviors may strain seemingly innocuous everyday interactions within a family's private and public lives (Estes et al., 2009). Specific ASD factors that have been examined in relation to parental stress include marked deficits in adaptive behaviors, elevated behavior problems, and level of severity of ASD symptoms. Despite their presence in the literature, mixed evidence is available regarding these topics (Estes et al., 2009; LeCavalier et al., 2006; Davis & Carter, 2008).

The contribution of adaptive behavior to parental stress is particularly ambiguous within the scholarly literature. Adaptive behavior can be viewed as the individual's ability to successfully engage in daily activities that promote independent functioning within one's environment (Sparrow, Cicchetti, & Balla, 2005). Central symptoms to ASDs, such as social-communication deficits, may inherently limit an affected person's ability to engage in adaptive behaviors including, but not limited to, forming and maintaining relationships with others, managing their own hygiene and self-care, and safely navigating their communities (Klin et al., 2007). These struggles may also require additional supervision and care from caretakers, which can further tax the resources available to parents of such children (Hall & Graff, 2011). Several studies investigating the influence of adaptive behavior in children with ASDs have found no significant association with parental stress (LeCavalier et al., 2006; Beck, Hastings, Daley, &

Stevenson, 2004; Estes et al., 2009), whereas others have determined that such skills contribute to the level of stress experienced by parents of children with ASDs (Fitzgerald, Birkbeck, & Matthews, 2002; Tomanik et al., 2004; Hall & Graff, 2011). However, it is important to note that the studies that failed to find a significant relationship between adaptive behavior and parent stress also measured the role that problem behaviors had in reported stress levels (LeCavelier et al., 2006; Beck et al., 2004; Estes et al., 2009). These differences may be due to the overlap of adaptive behaviors and other child characteristics of interest (e.g., problem behaviors) in those with a diagnosis of ASD. For example, children with limited communication skills (an adaptive behavior) may scream or throw tantrums (a problem behavior) as a means of expressing their needs. Perhaps this difference is not readily identified if both constructs are not simultaneously measured and investigated.

Research has demonstrated that limited mastery of adaptive behavior skills can also lead to elevated behavior problems, which have also been identified as a contributor to parental stress (Hall & Graff, 2011). In children with ASDs, the most challenging problem behaviors often encountered include temper tantrums, aggression, property destruction, self-injury, and stereotypies (Horner, Carr, Strain, Todd, & Reed, 2002). Similar behavior problems have emerged as a highly predictive factor in parental stress for parents of children with a variety of developmental disabilities (Baker, Blacher, Crnic, & Edelbrock, 2002; Beck et al., 2004, Hodapp, Ricci, Ly, & Fidler, 2003). Research of parents of children with ASDs has also reflected these findings. In fact, some research has found that behavior problems were stronger predictors of parental stress than adaptive behaviors (Lecavalier et al., 2006) or the severity of the child's symptoms

(Phetrasuwan & Miles, 2009) for parents of children with autism. The specific behaviors and how they interact within the family to produce stress is still largely unknown. There is evidence that mothers and fathers may differ in which of their child's problem behaviors influence their stress levels and how that stress affects parental mental well-being (Davis & Carter, 2008; Hastings, 2003; Hastings et al., 2005). However, this research is limited to very young children (Davis & Carter, 2008; Hastings et al., 2005) and more general assessments of problem behaviors by teachers (Hastings, 2003).

Whether or not problematic behaviors are central to the ASD diagnosis has also been explored within the literature (Hayes & Watson, 2013). Some studies have examined the influence of core ASD characteristics, such as social-communication deficits and repetitive/ restrictive behaviors, on parental stress. Research has questioned whether or not the severity of these core ASD symptoms may uniquely impact the level of stress experienced by parents, regardless of the presence of problem behaviors or other commonly reported differences not central to the diagnosis. For instance, some researchers have found that impairments in social-communication skills have been significant predictors of stress for some parents (Bebko, Konstantareas, & Springer, 1987; Davis & Carter, 2008) whereas other have found that restricted behaviors may exacerbate parental stress (Gabriels, Cuccaro, Hill, Ivers, & Goldson, 2005). Conversely, some research has failed to show a link between the severity of ASD symptoms and parental stress (Yamada et al., 2007) whereas others have demonstrated a clear association between a child's ASD symptomatology and parental stress (Lyons et al., 2010; Ingersoll & Hambrick, 2011). These differences may be attributed to cultural presentation of ASD symptoms between the Japanese sample population in the Yamada

and colleagues (2007) research and the American samples in the studies that confirmed a link between ASD symptomatology and parent stress. These discrepancies may also be due to differences in the measures used to assess symptom severity. For example, Lyons and colleagues (2010) and Ingersoll and Hambrick (2011) both utilized measurements that were developed in 1988 before ASDs were conceptualized as a spectrum, whereas the instrument used in the Yamada et al. (2007) was constructed in 2006. Nevertheless, these conflictual findings warrant further investigation utilizing a more current instrument that assesses ASD symptomatology.

Measures of Parental Stress

Further clarity regarding the interaction of a child's symptoms, behaviors, and skills may yield valuable information regarding family functioning and coping strategies. Despite the wide variety in the aforementioned studies, several common measures emerged as a means of operationalizing and measuring parental stress.

Measures of stress have been widely used throughout the literature with mothers, fathers, and other care providers of children with ASDs. A thorough meta-analysis of the parenting stress literature for mothers and fathers of children with ASDs by Hayes and Watson (2013) revealed that the majority of studies that examined stress as an outcome measure primarily utilized two separate measures and their respective variations, namely: (a) the Questionnaire on Resources and Stress (QRS; Holroyd, 1974) or (b) the Parenting Stress Index (PSI; Abidin, 1995).

The Questionnaire on Resources and Stress (QRS; Holroyd, 1974) is a 285 item questionnaire designed to assess stress experienced by parents of children with mental, physical, or medical impairments. Items are structured in a true-false format and map

onto 15 different scales related to family stress (poor mood/health, negative attitude toward index case, lack of family integration, limits on family opportunity, excessive time demands, overprotection/dependency, overcommitment/martyrdom, lack of social support, financial problems, physical incapacitation, lack of family integration, lack of activities, difficult personality characteristics, social obtrusiveness, and occupational limitations) in addition to a total stress score. (Holroyd, 1974). Partially due to its length, this measure was also developed into several short-forms (Holroyd, 1987; Konstantareas, Homatidis, & Plowright, 1992; Friedrich, Greenberg, & Crnic, 1983). The most commonly utilized version is the QRS-F, a 52 item short-form that consists of four scales: pessimism, child characteristics, physical incapacitation, and parent and family problems (QRS-F; Friedrich, Greenberg, & Crnic, 1983). The full-form QRS has demonstrated excellent internal consistency ($\alpha = .96$) and sufficient discriminant validity between different stress profiles produced by psychiatric illness versus a physical disability (Holroyd, 1974; Holroyd & Guthrie, 1979).

Although both versions of this measure are now commonly utilized, there is a dearth of research examining the psychometric properties of the short-form questionnaire (Blount et al., 2008). Additionally, the QRS has been criticized for its lack of validation with various diagnostic populations (Honey, Hastings, & McConachie, 2005; Hayes & Watson, 2013). Specific concerns regarding the utility of this measure with parents of children on the autism spectrum have also been raised in the literature (Hastings, 2003; Hastings & Johnson, 2001; Honey, Hastings, & McConachie, 2005). For instance, research by Hastings and colleagues (2001, 2003) utilized the full-form version of the QRS but noted that it excluded the scales of child characteristics and physical

impairments because they appeared to assess the child's disability rather than the stress from the parent. Honey, Hastings, and McConachie (2005) examined the factor structure of the QRS in parents of young children with ASDs. Results indicated that using the 31 items from two of the four subscales (parent and family problems and child characteristics) may be a more appropriate measurement of a parent's experience of stress rather than assessing their child's abilities (or lack thereof) (Honey, Hastings, & McConachie, 2005). Nevertheless, the QRS-SF has been used frequently as a means of ascertaining stress levels experienced by parents of children with ASDs (Lyons et al., 2009; Estes et al., 2009; Hastings, 2003; Hastings & Johnson, 2001; Osborne & Reed, 2009).

Despite a considerable amount of overlap between the PSI and the QRS (Sexton, Burrell, Thompson, & Sharpton, 1992), the Parent Stress Index (PSI; Abidin, 1995) is perhaps the most popular measure of parental stress in families of children with disabilities (Amaral, Geschwind, & Dawson, 2011, p. 1184). The current full length version of this assessment is a 101 item measure whereas the short-form consists of 36 items. Both formats of the PSI are comprised of statements that the respondent answers on a 5-point Likert scale (where 1 is "strongly disagree" and 5 is "strongly agree"). The PSI and PSI short form (PSI-SF) are similar in that they both measure factors related to stress that are endemic to the child and the parent. The full form produces a total stress score in addition to a child domain score, consisting of six subscales, and a parent domain score, comprised of seven subscales. In contrast, the short form yields three subscales (Parent-Child Dysfunctional Interaction, Parental Distress, and Difficult Child) as well as a total stress score. Correlations between the total stress scores of both forms is good ($r=$

0.94, $p < .001$) (Abidin, 1995). However, the psychometric properties of the PSI-SF are less understood than its full-length counterpart (Haskett, Ahern, Ward, & Allaire, 2006).

According to the author of this measure, both are sufficient tools in assessing parent stress for children less than 12 years old (Abidin, 1995). Be that as it may, the PSI has been used with parents of children beyond the age of 12 with a variety of disabilities, including ASDs (e.g., Fedele, Grant, Wolfe-Christensen, Mullins, & Ryan, 2010; Hastings et al., 2005). Despite its popularity in parental stress research of mothers and fathers of children with ASDs (LeCavalier et al., 2006; Hall & Graff, 2011; Dunn et al., 2001; Tobing & Glenwick, 2006; Carter & Davis, 2008; Ingersoll et al., 2011), little research exists examining the psychometric soundness of this measure for families with a child with an ASD. Research by Zaidman-Zait and colleagues (2010) posits that items on the PSI-SF may be “sufficiently generic to capture the lived experiences of parents of children with ASDs” (Zaidman-Zait, Mirenda, Zumbo, Wellington, Dua, & Kalynchuk, 2010). That is, endorsement of several of the items may be better explained by child characteristics that are representative of ASDs (e.g., “Child smiles at me less than expected”) or parental reframing of behaviors due to deepened understanding about the child’s diagnosis. An example of the latter would be a parent answering the item “My child does things to bother me to be mean” differently based on their familiarity with their child’s diagnosis. However, cautious interpretations of PSI scores can still render fruitful information regarding the experiences of parents of children with ASDs.

Given the past success of the PSI-SF with this population within the literature and the utilization of a separate child characteristic measure, the PSI-SF appears to be an apt measure for the purposes of this study. The content validity issues of the full-length

version of the QRS and lack of empirical research evaluating the short-form of the measure raises serious questions regarding the use of this assessment. Although limited research has been conducted evaluating the psychometric properties of the PSI-SF with this specific population, the prevalence of this measure in the literature and psychometric data with similar populations (e.g., parents of children with developmental disabilities as a whole) appear to be sufficient justifications for its use in the present research questions.

Social Support

The literature suggests that one of the frequently reported mechanisms of coping with stressors is social support. Social support has been noted in the literature as a significant factor in the experience of stress and well-being (Cohen & Willis, 1985). Examination of social support has burgeoned to include a variety of populations, including parents of children with ASDs. Caregivers of children with ASDs report successfully utilizing coping strategies, such as tapping into social supports, as a means of ameliorating the effects of the aforementioned stress (Tunali & Power, 2002; Weiss, 2002; Benson, 2006; Luther, Canham, & Cureton, 2005; Siklos & Kerns, 2006). In fact, one of the most frequently reported methods of coping with having a child with an ASD is relying on social support (Meadan, Halle, & Ebata, 2010; Luther, Canham, & Cureton, 2005).

Definitions of Social Support

The definition of social support is multidimensional and may vary depending on the specific constructs of interest (Glidden & Schoolcraft, 2007). Social support can be defined as “information leading the person to believe that he/she is cared for and loved, esteemed and valued, and is a member network of communication and mutual obligation”

(Cobb, 1976). Facets of social support have been noted to include informational support, emotional support, attitude transmission, instrumental support (e.g., financial aid or material resources), and social companionship (Cobb, 1976; Dunst, Trivette, & Cross, 1986). However, these aspects of social support can be conceptualized as belonging to two broad categories: formal and informal supports (Glidden & Schoolcraft, 2007; Boyd, 2002; Bristol & Schopler, 1984). According to Bristol & Schopler (1984) formal supports are provided through an agency or organization in which money is exchanged for one or several facets of support (typically informational or instrumental support). Examples of formal sources of social support include physicians, psychologists, teachers, or other professionals. In contrast, informal supports include family members, friends, and community resources that are more likely to provide emotional support and companionship (Glidden & Schoolcraft, 2007).

Aside from whether a support network is primarily formal or informal, it is also important to consider whether or not the support is perceived as likely to occur or actually received by the recipient. Perceived support is the belief that support would be provided in a time of need whereas received support is assistance that has already being provided or has been provided in the past (Norris & Kaniasty, 1996). Although perceived support is likely to be more subjective than received support, research suggests that perceived support may be more accurate at predicting outcomes once a stressor is experienced (Sarason, Sarason, & Pierce, 1990) and may have a more direct effect on ameliorating stress and well-being (Norris & Kaniasty, 1996). However, this may be due to differences in perception rather than how efficacious the support may be at ameliorating stress (Haber, Cohen, Lucas, & Baltes, 2007). Additionally, the number or

availability of supports is not necessarily synonymous with the helpfulness of the support. In a study examining the differences of support utilized between parents of children with ASDs and parents of children with Down Syndrome Siklos and Kern (2006) found that parents from the two groups did not differ on the number of reported supports or whether or not important needs were met. Rather, the parents in the two groups differed on the types of supports they deemed as important and parents of children with ASDs reported generally more dissatisfaction with the supports they had received. Thus, it appears to be more beneficial to assess the perceptions of support rather than the number or types of supports used by parents. Ergo, this study will assess these perceptions as a means of determining the influence of social support on parental stress.

Models of Social Support

The framework in which social support is conceptualized has been debated frequently within the literature for decades (Cobb, 1976; Cohen & Willis, 1985; Stoneman, 1997). Social support theory posits two major explanations for the effects that have been demonstrated on well-being: the main effect model and the buffering effect model (Cohen & Wills, 1985). The main effect model contends that social support sources influence the well-being of the individual, regardless of the presence of stress in the person's life. The buffering effect model postulates that social support primarily serves as a protective factor against the adverse effects of stressful situations. That is, individuals that with a strong social support network will be more capable of mitigating maladaptive stress effects than those with less support.

Evidence to support both main effects and buffering effects has emerged in the parenting literature. Direct main effects of social support have been associated with

salutary effects on attitudes and behaviors of mothers (Crnic, Greenberg, Ragozin, Robinson, & Basham, 1983), overall health benefits (Cohen, Gottlieb, & Underwood, 2000; Gallagher & Whiteley, 2012), and quality of life (Cohen & Willis, 1985). Similarly, the buffering effects model has also demonstrated similar beneficial outcomes. Some of these benefits include physical health benefits (Lovell, Moss, & Wetherell, 2012), improved quality of life (Cohen & Willis, 1985), and lessened effects of marital stress on sibling relationships (Rivers & Stoneman, 2003). The buffering model may be preferable because it assumes that the greatest protection against the deleterious effects of stress occur for those who are faced with the greatest amount of stress and have strong social networks (Gerard, Landry-Meyer, & Roe, 2006). Furthermore, there is some evidence that informal supports may be more effective as buffers against stress than their formal counterparts (Glidden & Schoolcraft, 2007).

Given these two prominent models of social support, it is also important to consider the context in which the model is applied. Quittner, Glueckauf, and Jackson (1990) noted that a large portion of the social support literature was focused on acute stressors rather than chronic, ongoing stress. Other researchers have noted that specific characteristics regarding the support such as the size or quality of the support network (Kazak, 1987; Dunn et al., 2001; Boyd, 2002; Tobing & Glenwick, 2006), type of social support rendered (e.g., formal, informational, emotional) (Siklos & Kern, 2006; Ekas, Lickenbrock, & Whitman, 2010), and under which conditions support is utilized (Boyd, 2002; Glidden & Schoolcraft, 2007) is important to consider in future research regarding the benefits of social support in parents of children with developmental disabilities, such as in the present study.

Social Support in Parents of Children with ASDs

Research investigating parents of children with ASDs contends that social support is an important tool in combating the immense stress that can result from raising a son or daughter on the autism spectrum (Dunn et al., 2001; Boyd, 2002; Weiss, 2002; Bromley et al., 2004; Tway, Connolly, & Novak, 2007; Ekas, Lickenbrock, & Whitman, 2010). Despite the number of recent studies examining the role of social support in parents of individuals with ASDs, it is still unclear how various types of social support are utilized as coping strategies for addressing parental stress. While some parents note that informal supports are incredibly helpful (Boyd, 2002; Mackintosh, Myers, & Goin-Kochel, 2006; Benson, 2006;) others contended that formal supports were more advantageous (Silkos & Kern, 2006). Additionally, many parents of children with ASD find that their access to adequate social support may be limited (Meadan, Halle, & Ebata, 2010). In fact, the struggle in seeking social support to cope with the stress of raising their child has been associated with significant amounts of psychological distress in mothers of children with ASDs (Bromley et al., 2004). Unfortunately, the majority of the literature that exists regarding social support for parents of children with ASDs is limited to mothers and young children (Meadan, Halle, & Ebata, 2010). Furthermore, little is known regarding how social supports are utilized in the context of child characteristics that have been correlated with increased stress among parents, such as behavior problems, adaptive behavior deficits, and severity of symptoms.

The present study seeks to address the aforementioned limitations of the literature by expanding the population of interest to include parents of both sexes and include children that are beyond the ages of primary school. Furthermore, this study's focus on

how social supports are employed in the context of individual child characteristics will deepen the current understanding of parental stress for mothers and fathers of children with ASDs.

Measures of Social Support

Another notable challenge in the social support literature is the development of an accurate and reliable assessment of such a multidimensional and overarching construct. Glidden and Schoolcraft (2007) contend that although there is a bounty of social support measures, many of these measures are designed for specific studies and thus, may have questionable reliability and validity. In a meta-analysis of social support and stress among mothers of children with autism, Boyd (2002) noted that the most common social support measure utilized for this purpose was the Family Support Scale (FSS; Dunst, Trivette, & Cross, 1984).

The FSS is an 18-item measure that assesses the helpfulness of both formal and informal sources of support being utilized by the informant in the past 3 to 6 months. Responses are placed on a 5-point Likert scale with 1 indicating “not at all helpful” and 5 indicating that the support was “extremely helpful”. The FSS also includes a “not applicable” option for individuals who are not utilizing a particular support. Score totals indicate the amount of perceived support the individual feels that they are receiving.

According to Hanley, Tasse, Aman, and Pace (1998), Dunst et al. (1984) constructed six factors for in this assessment. These six factors include: informal kinship, formal kinship, social organizations, nuclear family, specialized professional services, and general professional services. However, the exact factors that exist within this measure have been debated throughout the literature (Hanley et al., 1998). Nevertheless,

research conducted by Hanley et al. (1998) examining the psychometric soundness of the FSS with 244 low-income Headstart families indicate that the FSS is overall reliable assessment of perceived helpfulness ($\alpha=.85$). Dunst et al. (1984) (as per Honey, Hastings, & McConachie, 2005), also described sound internal consistency ($\alpha=.0.77$) and test-retest reliability ($\alpha=.91$) in families with children with disabilities. This measure has also been used repeatedly in studies of families with children with ASDs (Bromley et al., 2004; Hastings & Johnson, 2001; Benson, 2006; Benson & Karlof, 2009; Hall & Graff, 2012). Another less common measure of social support is the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988). The MSPSS is a 12 item measure in which respondents endorse the perceived adequacy of support from three different sources (family, friends, and their significant other) on a 7-point Likert scale (1= very strongly disagree, 7= very strongly agree). The psychometric properties of this assessment appear to be sound (internal reliability, $\alpha=.88$; test-retest reliability, $\alpha=.85$) and have been applied to several various populations both in the US and internationally (Kazarian & McCabe, 1991; Asberg, Vogel, & Bowers, 2008; Mak & Kwok, 2010; Stuart & McGrew, 2009). Unfortunately, its application to parents of children with ASDs is rather limited. To the author's knowledge only two studies exist to date that use this measure with this population (Mak & Kwok, 2010; Stuart & McGrew, 2009). Although several scholars (e.g., Sarason, Sarason, & Pierce, 1990; Norris & Kaniasty, 1996; Glidden & Schoolcraft, 2007) argue that the paucity of its utility with this population should not be a discounting factor for its potential usefulness, given the aforementioned evidence the more appropriate measure of perceived social support for this study is the FSS. The prevalence of its successful usage in the literature signifies its

usefulness in assessing the population of interest's levels of perceived support and examining its role in attenuating stress.

Self-Efficacy

Along with social support, self-efficacy has also been linked to successfully mitigating the impact of life stressors. Bandura's (1977) seminal theory and research on self-efficacy has spurred hundreds of investigations of human behavior in light of various cognitive appraisals. More recently, the concept of self-efficacy has been applied to parents and its role in parent-child interactions. However, there has been limited research analyzing the connection between parental self-efficacy in mothers and fathers of children with disabilities (Hastings & Brown, 2002).

According to Bandura (1997), self-efficacy is critical to understanding how skills, behaviors, and actions are fostered and expressed. The knowledge of how to perform a task is not sufficient to the successful execution of that action. Rather, the person's *perceptions* of their capabilities to perform the task play a major role in performance. This may be why individuals with similar skill sets may vary drastically in their performance abilities depending on their own cognitive appraisals of their capabilities given their circumstances. Therefore, Bandura (1977) conceptualizes self-efficacy as an individual's perceptions of their ability to be successful in a specific domain of behavior. That is, individuals may feel more capable in one area of their life (e.g., parenting) than in others (e.g., advocating). It is important to note that this is distinct from outcome expectations in that self-efficacy involves the perceptions that a person has regarding the likelihood of success whereas outcome expectations are the belief that particular actions can successfully be harnessed to achieve an outcome. The importance of an individual's

perception of their abilities can further affect persistence, the choice of activities to engage in, and coping skills utilized.

Despite its significant role in human behavior, self-efficacy is not an inherent characteristic. Bandura (1977; 1997) articulated four primary sources of self-efficacy: performance experiences, vicarious experiences, verbal persuasion, and physiological states. Performance or mastery experiences have been argued to be especially powerful sources of self-efficacy because successful performance of a task can quickly reinforce an individual's confidence in successfully performing that task in the future. Likewise, repeated failure to perform successfully can diminish self-efficacy beliefs. Vicarious experiences are gained through social learning. That is, individuals are more likely to believe in their own capabilities to succeed if they witness others' success. Similarly, verbal persuasion bolsters self-efficacy when others utilize the power of suggestion to convince a person that they are capable of performing a task successfully. Lastly, Bandura contends that physiological information from the body can affect the information that one receives regarding their ability to cope with a given situation. Ergo, the reduction of stress and alteration of negative emotional states that have resulted from unhelpful cognitions can improve a person's self-efficacy.

Definitions of Parental Self-Efficacy

These sources of self-efficacy are multidimensional and complex given the context of the situation. In the realm of parenting, several various facets of self-efficacy have been highlighted within the literature. Some researchers have emphasized the perception of a parent's capability in the parenting role (Teti & Gelfand, 1991) whereas others have focused on parenting skills (Coleman & Karraker, 2003) or tasks (Scheel &

Rieckmann, 1998). Jones and Prinz (2005) went on to propose a more encompassing definition to describe parental self-efficacy as a construct that “involves a parent’s beliefs in their ability to influence their child and the environment in ways that would foster the child’s development and success” (p. 342). Through this lens, Jones and Prinz (2005) suggest that parent self-efficacy functions primarily as a transactional variable. That is, parents with higher levels of self-efficacy may have greater success in the role of the parent as reflected by the way their child responds which further reifies these elevated levels of self-efficacy. The inverse would also be true. Parents with lower levels of self-efficacy would likely have less success in the parenting role and therefore receive poor feedback from their child, re-entrenching the diminished levels of self-efficacy that they possess. The significance of this role suggests that parent self-efficacy can play a major role in both child and parent outcomes, depending upon the context.

The context of parenting can impact the outcome for both parents and their children. For example, research has illustrated racial and socioeconomic differences in parenting self-efficacy (Ardelt & Eccles, 2001). In the same research, a model proposed by Ardel and Eccles (2001) described a relationship between parenting self-efficacy, parent promotive strategies (e.g., involvement in community organizations or seeking out child sponsors), and the child’s academic or psychological developmental success. This model contends that parents with higher levels of self-efficacy are more likely to be engaged in strategies to promote their child’s development which consequently increases the child’s developmental success. The authors postulate that these relationships also function in the inverse, meaning that parents with lower levels of self-efficacy are less

likely to be engaged in promotive strategies and their child's developmental success may suffer as a consequence.

Parental Self-Efficacy in Families of Children with ASDs

Despite the uncertainty in how self-efficacy interacts with other variables of interest, there is growing interest in the literature to determine how self-efficacy may influence parents who have a child with a disability. According to Hastings and Brown (2002), this research has primarily examined parental self-efficacy as either a predictor of parent outcome variables or as the dependent variable itself without examining the role of other significant influences of parental stress. The litany of research supporting the immense stress experienced by parents of children with ASDs and the unique contributors to this stress (e.g., adaptive behavior deficits, severity of the diagnosis, and behavior problems) position mothers and fathers of children with ASDs to be an important demographic of interest in this research. Karst and Van Hecke (2012) elaborated that better understanding parenting self-efficacy in this population may be uniquely different from other parent's experiences for several reasons. First, the core characteristics of an ASD diagnosis may cause parents to feel less capable of meeting their child's needs due to inherent deficits in communicating specific wants and needs. Secondly, the vast number of interventions and resources available to parents for their child and the time dedicated to the consumption of these resources can exacerbate parental stress levels and limit finite resources of parents of children with ASDs. Nevertheless, such research with this population is relatively limited.

One small study conducted by Hastings and Brown (2002) assessed the levels of self-efficacy, anxiety, and depression in 26 mothers and 20 fathers of children with

ASDs. Teachers of the target child also completed measures of problem behaviors seen within the child. Analyses revealed that self-efficacy acted as a mediator to maternal depression and anxiety, but not paternal depression and anxiety. However, self-efficacy did act as a moderating variable to paternal anxiety in light of problem behaviors. This may indicate that self-efficacy functions differently depending on the gender of the parent, specifically in light of challenging behaviors.

Challenging behaviors have been implicated in other studies examining parental self-efficacy in parents of children with ASDs. Research by Rezendes and Scarpa (2011) attempted to better explore the relationship between problem behaviors in children with an ASD, parental self-efficacy, and parent mood symptoms. Findings revealed that maladaptive behaviors in children with an ASD were associated with increased levels of parental stress and decreased levels of parenting efficacy which were consistent with findings of previous research (Kuhn & Carter, 2006; Hastings & Brown, 2002; Lai, 2013). These decreases in parenting efficacy were also related to higher ratings of depressive and anxious symptoms. In contrast, research by Lai (2013) failed to find support for the role of social support and self-efficacy as moderators of behavior problems and parent stress in parents of sons and daughters with ASDs in Taiwan. However, this research did yield results that suggested that social support, parental self-efficacy, and child behavior problems are sound predictors of parental stress.

Measures of Parental Self-Efficacy

In a review of parenting self-efficacy research, Jones and Prinz (2005) postulated that there are three types of measurement of parental self-efficacy: general parenting self-efficacy, task related self-efficacy, and narrow domain specific self-efficacy. General

parenting self-efficacy is the degree to which the parent generally feels competent within the parenting role. In contrast, task related self-efficacy is a general feeling of competency related to a specific parenting task (e.g., toilet training) that may apply across several broad domains (e.g., warmth, discipline). Narrow domain specific self-efficacy focuses on a specific domain of parenting (e.g., communication, supervision) regardless of the tasks or skills involved. There has not been any evidence to indicate that one of these measurements is superior to others (Berry & West, 1993; Jones & Prinz, 2005). However, the variation in the dimensions of self-efficacy that they assess may reflect more precision regarding performance of specific tasks or more broad, sweeping measurements of a parent's beliefs regarding their general abilities depending on the tools being used (Lai, 2013).

According to Jones and Prinz (2005), the most common measure of parental self-efficacy is Parenting Sense of Competence Scale (PSOCS; Gibaud-Wallston & Wandersman, 1978; cited in Hassall et al., 2005). This is a brief 17-item measure that assesses general competency of how a parent feels about their own abilities within the parenting role. Items are self-reported on a 6-item Likert scale ranging from “strongly disagree” (1) to “strongly agree” (6).

However, a factor analysis by Gilmore and Cuskelly (2009) revealed that the PSOCS actually contains three factors: parenting satisfaction, efficacy, and interest. This study by Gilmore and Cuskelly (2009) assessed 1,201 parents (586 mothers and 615 fathers) on the PSOCS. Results indicated that responses by mothers were most often accounted for by efficacy (22.7% variance) whereas parental satisfaction was the largest contributor of variance for fathers' scores (23.8% variance). Internal consistency was

also calculated for mothers and fathers for satisfaction (mothers= .72, fathers=.76), efficacy (mothers= .68, fathers=.74), and interest (mothers=.62, fathers=.57). These results indicate that factorial validity and the internal consistency of this measure are sufficient.

Another standardized measure of generalized parental self-efficacy is the Parenting Self-Agency Measure (PSAM; Dumka, Stoerzinger, Jackson, & Roosa, 1996). The original measure is a 10-item measure that requires the participants to endorse the degree to which they agree with a statement on a 7-point Likert scale (1= rarely, 7=always). Strengths of this measure are not only its brevity but also the fact that it was normed using two ethnically diverse populations, Anglo American and Mexican American immigrant parents. However, there is little psychometric data backing the use of this measure and it is often used in conjunction with other more robust measures of parental self-efficacy.

When considering the appropriate tool for measuring parental self-efficacy in the current study, it is important to evaluate the psychometric soundness of the measure as well as brevity and usefulness with the target population. Although the PSAM is quite brief and easy for participants to complete, the lack of data regarding its psychometric properties and limited use with parents of children with ASDs are concerning. Therefore, this study will utilize the PSOC as a method of evaluating parental self-efficacy in the context of raising a child with an ASD.

Social Support, Parental Efficacy, and Stress

Despite recent research examining the relationship between stress and self-efficacy (e.g., Jones & Prinz, 2005), further analysis is needed to better understand these

constructs. In an attempt to further clarify the relationship between self-efficacy and stress, other factors have been explored in relation to these variables. Given the prominent benefits of social support as an adaptive coping strategy in handling parenting stress, researchers have begun to explore if there is a relationship between parental self-efficacy, parenting stress, and social support. Early research by Cutrona and Troutman (1986) found that social support had a significant negative relationship with maternal depression through the mediation of perceived parent self-efficacy in new mothers. Other research has also supported the idea of parental self-efficacy serving as a mediator, such as in studies examining its role in social support and warmth of the parent-child interaction (Izzo, Weiss, Shanahan, & Rodriguez-Brown, 2000). However, more recent research has been unable to determine a substantial contribution of social support in moderating the influence of income on parenting stress whereas parental self-efficacy accounted for a major portion of the model's variance (Raikes & Thompson, 2005). Not only is this contradiction indicative of a need of further exploration of these concepts, but it is also reflective of the disagreement of the exact role that parental self-efficacy plays as a mediator or moderator (Jones & Prinz, 2005).

Summary of Parental Self-Efficacy

Parental self-efficacy has been an interest among social scientist researchers for several decades. This concept has been strongly associated with parental stress and both parent and child outcomes (Jones & Prinz, 2005). As researchers broaden their scope of study, investigation of the specific role of parental self-efficacy has been increasingly explored. However, whether parental self-efficacy acts as a mediator, moderator, predictor, or transactional variable appears to vary widely given the context of the subject

(Kuhn & Carter, 2006; Lai, 2013; Hastings & Brown, 2002, Jones & Prinz, 2005).

Investigators have also attempted to broaden our understanding of parental self-efficacy by studying how it is influenced in families that may be particularly prone to threats of self-efficacy, including parents of children with ASDs. However, this research is relatively neoteric and restricted to mothers of young children and specific behavior problems displayed by their child.

Mothers and Fathers of Children with ASDs

Mothers have overwhelmingly comprised the samples of interest in most studies examining the impact of having a child with an ASD. Within recent years, more researchers have begun investigating the similarities and the differences between mothers and fathers of children with an ASD (Davis & Carter, 2008). However, these studies have been few in number and have presented mixed findings in the experiences of parental stress, parental self-efficacy, and social support.

One area that is especially contentious is the experience of parental stress for fathers compared to mothers of children with ASDs. Whereas some researchers have found no difference in self-reports of stress (Benson, 2006; Hastings et al., 2005; Davis & Carter, 2008), others have found that mothers report experiencing significantly more stress than fathers (Hastings, 2003; Herring et al., 2006; Little, 2002). That is not to say that fathers do not also experience high levels of stress. Davis and Carter (2008) noted that both parents reported high levels of stress whereas Herring and colleagues (2006) found that fathers of children with ASDs reported significantly more stress than fathers of children with developmental delays.

However, it is difficult to determine why these drastic differences in stress between parents have occurred. It may be that the samples in these studies differed in how much fathers were involved in the caregiving responsibilities of the child and therefore less stressful. Some researchers (e.g., Gray, 2003) noted that mothers are typically assuming more responsibilities in the caregiving needs of the child with an ASD, which can contribute to experienced stress. Furthermore, there were noticeable differences in the diagnostic severity of the children whose parents participated in these studies. Interestingly, studies that reported higher levels of maternal stress than paternal stress were more likely to include parents of children with traditionally “less severe” diagnoses such as Asperger’s and PDD-NOS (Little, 2002; Herring et al., 2006) than those who did not find a significant difference in stress levels (Benson, 2006; Davis & Carter, 2008; Hastings et al., 2005). The inclusion of a measure of symptom severity in the current study as a means of assessing child characteristics as well as information assessing who primarily cares for the child can help further clarify these differences.

Sadly, the meager amount of evidence regarding paternal and maternal differences in parenting stress is perhaps the most robust area of comparison of parents of children with ASDs. Only one study exploring self-efficacy in both mothers and fathers was found. In this study, Hastings and Brown (2002) found that while self-efficacy moderated the effect of child behavior problems on paternal anxiety whereas self-efficacy mediated the relationship between maternal anxiety and depression symptoms and child behavior problems. However, this study had an extremely small sample size and to the author’s knowledge has yet to be replicated in light of other child characteristics. Further exploration of these potential differences by the current study will provide deeper

understanding regarding the differences and similarities in these relationships in these families.

Rationale for the Current Study

Although the growing numbers of children diagnosed with ASDs has piqued the interest of researchers across a wide variety of fields, a vast amount of information remains unknown regarding how a child with an ASD influences their parents. It is well-established in the literature that these mothers and fathers experience greater amounts of stress compared to parents of children with other disabilities or parents of typically developing children. The negative implications of parental stress have also been well-documented in this population. At this time, it is crucial to move beyond these steps and strive to better understand how to intervene and ameliorate this stress among mothers and fathers of children with ASDs.

The current study attempts to do this in several ways. First, this study will strive to further clarify the influence of specific child characteristics (problem behaviors, adaptive behavior deficits, and symptom severity) that have been associated with increased stress in both mothers and fathers of children with ASDs. To the author's knowledge, no study to date has examined these three factors simultaneously in both mothers and fathers of children with ASDs. This expansion of research that is inclusive of both genders of parents is also an important addition to the body of existing research given the mounting evidence of different parenting between mothers and fathers (Hastings & Brown, 2002; Gray, 2003; Hastings, 2003; Herring et al., 2006; Little, 2002; Davis & Carter, 2008). Furthermore, this study also seeks to clarify the relationship between social support and parental self-efficacy in parental stress of parents of children

with autism. This will be done by examining whether or not self-efficacy mediates the relationship between child characteristics and parental stress and if social support serves as a mediator or a moderator between the same variables. The clarification of this research can provide helpful information that can assist helping professionals better formulate interventions within the family and thus bolster parent well-being. Lastly, this study will attempt to expand the current demographics of literature to include parents of adolescents or adult children that are residing within their parent's home and are primarily cared for by their mothers and fathers. The narrowed scope of ASD research on young children has inadvertently limited the knowledge of how parents of children with ASD fair across the lifespan and thus, stunted the ability of professionals to better assist these families.

Research Questions

This study will achieve the aforementioned aims through examining the following research questions:

Research question 1: Are there significant relations among parental stress and the following variables: parental self-efficacy, perceived social support, severity of child symptoms, child behavior problems, and child adaptive behavior skills? Do these relationships differ when comparing mothers and fathers of children with ASDs?

Research question 2: Which child characteristics contribute the most to parental stress for parents of children with ASDs? Does this differ for mothers and fathers?

Research question 3: Does parental self-efficacy mediate the relationship between child characteristics and parental stress for mothers, fathers, or both parents of children with ASDs?

Research question 4: Does social support mediate or moderate the relationship between child characteristics and parental stress in mothers, fathers, or both parents of children with ASDs?

Research question 5: Does social support moderate or mediate the relationship between parental self-efficacy and stress in mothers, fathers, or both parents of children with ASDs?

CHAPTER III

METHODS

This section of the paper describes the specific participants, demographics, measures, and procedures used within this study to sufficiently answer the research questions being proposed. Specifically, recruitment procedures are reviewed, followed by a description of the measures used in the present study. The chapter concludes with plans for data analysis.

Recruitment Procedures

Participants were recruited from local, state-wide, and national parent support groups for those with a child with ASD. List serves, agencies serving this demographic, and snowball sampling were utilized to solicit the participation of parents. All forms and procedures were presented to the University of North Dakota Institutional Review Board (IRB) to ensure the protection of all participants. An IRB-approved recruitment letter (Appendix A) was provided via email for electronic list serves to potential participants who meet the specific study's inclusion criteria. IRB-approved recruitment flyers (Appendix B) were also displayed in agencies that commonly serving this demographic (e.g., pediatric unit of a hospital, on-campus speech and language clinic, pediatric occupational therapy clinic). Interested participants were asked to contact the researcher via email to provide their mailing address to receive the assessment measures. Individuals who expressed interest in the study in-person were offered packets at that time if packets

were available. Participants who respond electronically were mailed a packet containing a letter describing the purpose of the research and directions (Appendix C) and all survey information. Survey information included a demographics questionnaire (Appendix D), PSI-SF (Appendix E), FSS (Appendix F), PSOC (Appendix G), the BASC-2-PR (Appendix H), and the GARS-3 (Appendix I). A pre-paid return envelope was included within this packet for participants to use as a means of returning the completed data. If the examiner did not receive the packet within one month of sending it, a reminder email was sent to the parent prompting him or her to complete the data.

For methodological purposes, only one parent from each household was requested to participate in the study. If both the child's mother and father expressed interest in participating, fathers were favored due to the dearth of literature regarding fathers of children with ASDs. In return for their time, participants had the option to submit their name into a drawing for a \$50 Amazon gift card.

Instruments

Demographic Questionnaire. Demographic data was collected using an adapted demographic form from MacDonald (2011). Information regarding participant age, the age and gender of their child with an ASD, number of individuals living in the home, their child's ASD diagnosis, socioeconomic status, parent gender, and ethnicity was collected to lend insight into the representativeness of the sample. Additionally, parents were asked whether or not they perceive themselves to be the primary caregiver of their child with an ASD and how much time they estimate they engage in caring for their child.

Parenting Stress Index-Short Form (PSI-SF). The Parenting Stress Index-Short Form (PSI-SF) (Albdin, 1995) is a 36-item measure that is commonly used to measure parent stress of mothers and fathers of children with ASDs (Zaidman-Zait et al., 2010). This abbreviated form was originally derived from the 101-item Parenting Stress Index (Lloyd & Albdin, 1985). Items are presented in on a 5-point Likert-scale with 1 (strongly agree) and 5 (strongly disagree). The PSI-SF contains three subscales, consisting of 12 items each that yield distinct scores: Parental Distress (PD), Parental-child Dysfunctional Interaction (PCDI), and Difficult Child (DC) (Zaidman-Zait et al., 2010). The PD scale assesses the stress a parent may experience due to a lack of personal resources, such as feeling severely limited in their ability to fulfill their own wants or needs. The PCDI measures the amount of satisfaction a parent derives from their interactions with their child. The DC scale measures the challenging behaviors that may contribute to the overall stress of the parent (Zaidman-Zait et al., 2010).

In totality, these three subscales provide a total PSI-SF score that is thought to represent that overall distress the parent experiences. Using the procedures specified in the manual, raw scores were converted to t-scores for the aforementioned subscales. Only the Total Stress index was used in the present study as a measure of overall parenting stress. The scores are then converted into percentile scores, with scores above the 90th percentile indicating severe stress that may indicate the need for professional intervention (Zaidman-Zait et al., 2010; Shaffer, 2012). According to Zaidman-Zait and colleagues (2010), the PSI-SF was reported to have sufficient reliability (Cronbach's alpha .80 to .87 for all three subscales) and validity in Albdin (1995). However, as Haskett et al. (2006)

points out, this scale was validated on two, typically-developing and predominantly white, married populations.

Haskett et al. (2006) examined the psychometric properties of the PSI-SF in 185 mothers and fathers. This sample was also more ethnically diverse than Albdin's (1995) original sample with 68% of respondents identifying as African-Americans, 34% Caucasian, and 2% Hispanic or biracial. A confirmatory factor analysis was conducted, which most strongly supported a two factor model (PD and PCDI) rather than a three factor model. The internal consistency of these factors were .78 and .91, respectively. A subsample of the original sample ($n=21$) were retested a year later and were relatively stable ($r=.61$, $p<.005$ PD subscale; $r=.75$, $p<.001$ for total scale scores), demonstrating test-retest reliability and predictive validity.

To further understand the utility of the PSI-SF in non-typical populations, Zaidman-Zait et al. (2010) explored the psychometric properties of this assessment for young children with an ASD. The researchers used item-response theory (IRT) to examine how well the items discriminated between parents of children with an ASD and their experienced levels of stress. Items within the subscales were categorized in three groups: Items that function very well and discriminate across all scores of the item, items that function moderately well across scores and lastly, those that functioned poorly. Results indicated that the PD subscale appeared to be particularly apt at detecting changes in the severity of the stress experienced by the parents as evidenced by changes in overall parent distress based on these items. There was more variability in the PCDI and DC subscales, which focus more on child-based characteristics. Given that this assessment was normed on typically-developing children, this is not surprising. This may

indicate a deficit in content validity for this population and should be interpreted in conjunction with other measures.

Family Support Scale. The Family Support Scale (FSS; Dunst et al., 1984) is a measure that assesses the helpfulness various supports that parents are utilizing in their daily lives (Appendix F). This 19-item scale measures the helpfulness of formal and informal supports in the past 3 to 6 months with two additional items that participants can write in additional sources of support. Responses are placed on a 5-point Likert scale with 1 indicating “not at all helpful” and 5 indicating that the support was “extremely helpful”. The FSS also includes a “not applicable” option for individuals who are not utilizing a particular support. Score totals indicate the amount of perceived support the individual feels that they are receiving. In the present study, values were transferred to the FSS score sheet to create totals for five sources of support: Kinship, Partner/Spouse, Informal, Programs/Organization, and Professional Services. These totals were used to produce averages of the scores within each source of support. Using the authors’ suggested scoring procedures, the produced averages yielded informal and formal sources of support scales. These scales were combined to produce a total source of support score, which was utilized in this study to measure perceived social support.

According to Hanley et al. (1998), Dunst et al. 1984 constructed six factors for in this assessment. These six factors include: informal kinship, formal kinship, social organizations, nuclear family, specialized professional services, and general professional services. However, the exact factors that exist within this measure have been debated throughout the literature (Hanley et al., 1998). Nevertheless, research conducted by Hanley et al. (1998) examining the psychometric soundness of the FSS with 244 low-

income Headstart families indicate that the FSS is overall reliable assessment of perceived helpfulness ($\alpha=.85$).

Parenting Sense of Competence Scale. The Parenting Sense of Competence Scale (PSOCS; Gibaud-Wallston & Wandersman, 1978; cited in Hassall et al., 2005) is a brief 16-item measure that assesses how a parent feels about their own competency within the parenting role. The PSOCS consists of 16-items that create two subscales: Satisfaction (9 items) and Efficacy (7 items). Items are self-reported on a 6-item Likert scale ranging from “strongly disagree” (1) to “strongly agree” (6) and comprise two scales: parenting satisfaction and parenting efficacy. According to Hassall, Rose, and McDonald (2005), Johnston and Mash (1989) confirmed these two primary factors within this assessment. In accordance with the scoring procedures outlined by the authors, all Satisfaction items (items 2, 3, 4, 5, 8, 9, 12, 14, and 16) were reverse scored. Score totals for both subscales were calculated after the required reversals to create a total score of parent sense of competency. Higher scores were indicative of a higher sense of parental self-competency. The total score was used in the present study to measure perceived parent competency.

However, a factor analysis by Gilmore and Cuskelly (2009) revealed three factors: parenting satisfaction, efficacy, and interest. This study by Gilmore and Cuskelly (2009) assessed 1,201 parents (586 mothers and 615 fathers) on the PSOCS. Results indicated that responses by mothers were most often accounted for by efficacy (22.7% variance) whereas parental satisfaction was the largest contributor of variance for fathers' scores (23.8% variance). Internal consistency was also calculated for mothers and fathers for satisfaction (mothers= .72, fathers=.76), efficacy (mothers= .68, fathers=.74), and

interest (mothers=.62, fathers=.57). These results indicate that factorial validity and the internal consistency of this measure are sufficient.

Due to its utility in the literature (e.g., Rezendes & Scarpa, 2011; Tobing & Glenwick, 2006), the 8 questions that comprise the parenting efficacy scale score will be utilized in the current study. Additionally, the use of these items with both mothers and fathers will permit a more direct comparison of gender differences given the heterogeneity in parental ratings found in some research (Gilmore & Cuskelly, 2009).

BASC-2-PRS. The Behavioral Assessment Scales for Children-Second Edition-Parent Rating Scale (BASC-2-PRS; Reynolds & Kamphaus, 2004) is a 134-160 item measure that assesses the adaptive and problem behaviors of individuals across several dimensions. This measure can be divided into several factors that contain relevant subscales to the construct being measured. Subscales that directly measure adaptive behavior include: Activities of Daily Living, Adaptability, Functional Communication, Leadership, and Social Skills. Subscales that yield the Behavior Symptoms Index include: Hyperactivity, Atypicality, Depression, Aggression, Attention Problems, and Withdrawal. The parent report form of the BASC-2 exists in three versions based on the target child's age: preschool (ages 2-5 years), child (ages 6-11 years), and adolescent (ages 12-21 years). To ensure that participants in this study record information consistent with their child's age, they were asked to provide this information when they gave the researcher their mailing address so the appropriate version of the BASC-2-PRS could be enclosed in their packet. Parents of adult children with ASDs over the age of 21 were given the adolescent form.

Each item on the BASC-2-PRS is rated on the frequency that the described activity is executed on a four-point scale, ranging from “never” to “almost always”. A total adaptive score is calculated across these dimensions to give an overall assessment of the individual’s adaptive behavior abilities. Scores are converted to T-scores ($M=50$, $SD=10$) and percentile ranks. Higher scores are indicative of more abnormal behaviors on all scales except for adaptability, in which lower scores reflect fewer age-appropriate adaptive behaviors. In the present study, composite T-scores for the Behavioral Symptom Index was used to assess problem behaviors whereas the composite T-score for Adaptive Skills was used to measure adaptive behavior.

The BASC-2-PRS was normed on the parents of 1,200 parents of children ages 2 to 5 years of age, 1,800 children 6 to 11 years of age, and 1,800 adolescents ages 12 to 18 years old (Reynolds & Kamphaus, 2004). These samples largely matched the 2001 U.S. Census data in terms of gender, ethnicity, and age (Sattler & Hoge, 2006, p. 278). Reliability appears to be adequate for this measure with internal consistency reliabilities ranging from .70 to .88, test-retest reliabilities ranging from .65 to .89, and inter-rater reliabilities ranging from .56 to .90 (Reynolds & Kamphaus, 2004). Additionally, the BASC-2-PRS also demonstrates moderate to strong concurrent validity with the other commonly used measures such as the Achenbach System of Empirically Based Assessment (ASEBA; Achenbach & Rescoria, 2001) and the Conner’s Parent Rating Scales (CPRS; Conners, 1997). Furthermore, differential diagnostic profiles are provided for several diagnoses, including ASDs (Kamphaus & Reynolds, 2004; Tan, 2007).

Given its psychometric properties and robust nature, it is not surprising that ASD research utilizing the BASC-2-PRS has increased in recent years. Research by Mahan

and Matson (2011) revealed profile differences between children and adolescents with ASDs compared to neurotypical controls. These discrepant scores indicated that those with ASDs had higher scores on a several subscales that comprised both the internalizing and externalizing composite scores and significantly lower scores on adaptive behavior items than their typically developing peers. Less pronounced but similar discrepant scores were also found in Volker et al.'s (2010) comparison of BASC-2-PRS ratings of children with high-functioning ASDs and neurotypical controls, indicating that severity of problem behaviors may play a unique role in the experiences of parents based on their child's specific symptoms. Furthermore, some research has found that there are few differences between individuals diagnosed with Asperger's, autism, and PDD-NOS on ratings of adaptive behavior on the BASC-2-PRS (DeVries, Bundy, & Gore, 2012). This may be illustrative of more global deficits in adaptive behavior abilities within the ASD diagnosis rather than between diagnostic categories, which once again verifies the use of the ASD umbrella within this study.

Gilliam Autism Rating Scale- Third Edition. The Gilliam Autism Rating Scale-Second Edition (GARS-3; Gilliam, 2014) was utilized to determine the severity of ASD symptoms. The GARS-3 (Gilliam, 2014) is composed of 58 items that contribute to six different subscales: Restricted/Repetitive Behaviors, Social Interaction, Social Communication, Emotional Responses, Cognitive Style, and Maladaptive Speech. Using the procedures specified in the GARS-3 manual, the examiner calculated raw score subtotals for each subscale and converted subscales into percentile ranks and scaled scores specified within the scoring section of the GARS-3 appendices. Gilliam (2014) specifies that the Autism Index score is the most reliable and best singular score to

identify individuals who have an ASD. Therefore, the Autism Index was calculated for each participant to determine severity of autism symptoms. In accordance with the test author, Autism Index scores were generated by summing the scaled scores of four scaled scores (Restricted/Repetitive Behaviors, Social Interaction, Social Communication, and Emotional Responses) if the child was non-communicative or all six of the aforementioned scales if the child possesses verbal abilities. The author notes that although the AI is the most reliable score on the GARS-3, scores below 70 on the AI indicate that the likelihood of an ASD diagnosis is unlikely (Gilliam, 2014). Therefore, only the AI was utilized in the present study as a measurement of symptom severity.

This measure was normed on over 1,800 children with an ASD diagnosis ages 3 to 22 in the United States. The reliability coefficients were found to be highly consistent with .90 for the Restricted/Repetitive Behaviors items, .94 for the Social Interaction items, .89 for the Social Communication items, .90 for the Emotional Responses items, .86 for the Cognitive Style items, .79 for the Maladaptive Speech items. Reliability coefficients were .94 for the total score when it was calculated from the primary four scores (Autism Index-4; Social Interaction, Social Communication, Emotional Responses, and Cognitive Style) and .93 for the total score that was derived from all six scores (Autism Index-6). Test-retest reliability indicated sufficient stability with all of the four reliability coefficients falling within the range of .76 to .90 and a significance level below .01. To assess criterion validity of this measure, the subscales utilized reflect the definition of autism utilized by the DSM-5. . Item discrimination coefficients exceeded the .40 value selected by the authors to be retained on the scale with a range of .57 to .86. Criterion-prediction validity was assessed by comparing the GARS-2 to the Autism

Behavior Checklist (ABC), , the Autism Diagnostic Observation Scale (ADOS), the Carolina Autism Rating Scale- Second Edition (CARS-2), and the Gilliam Asperger's Disorder Scale (GADS). The magnitude of these scores with the overall score of the GARS-3 from both the Autism Index-4 and Autism Index-6 was large or very large (range: .68-.83).

The psychometric properties of the GARS-2 have been praised as a significant improvement from its original version (Montgomery, Newton, & Smith, 2008). The author of the assessment and other researchers (e.g., Montgomery, Newton, & Smith, 2008; Li, 2012) argue that criticisms made by some authors regarding the GARS (e.g., South et al., 2002; Lecavalier, 2005) have been improved upon in the most recent version and has therefore improved its utility as a screener to assess ASD symptom severity (Gilliam, 2006). Although recent research has utilized the GARS-2 successfully to examine similar constructs as those used in this study (Hoffman, Sweeney, Hodge, Lopez-Wagner, & Looney, 2009; Lai, 2013), there is little research available using the GARS-3 due to its novelty. It is important to note that to the author's knowledge no independent research exists at this time examining the specific psychometric properties of the GARS-3 in comparison to the original GARS or the GARS-2.

CHAPTER IV

RESULTS

All survey and demographic data was entered into the Statistical Package for Social Sciences (SPSS) to complete the necessary analyses. Scores produced by the utilized assessment measures were converted into z-scores to permit equitable comparisons across measures.

Pearson product-moment correlations were examined to determine if there are significant relations among parental stress and two sets of variables: (a) child characteristics (symptom severity, adaptive behavior, and problem behaviors) and (b) parent variables (parental self-efficacy and perceived social support). These scores were correlated with the parental stress scores. A step-wise regression analysis was conducted to determine which child characteristic (adaptive behavior, problem behaviors, or symptom severity) explain the largest proportion of variance in parental stress. Only child characteristics that were significantly correlated with parental stress scores will be included within this analysis. Two separate hierarchical regressions were conducted for maternal and paternal stress to permit comparisons of differences between parents. Next, a multiple regression analysis was conducted to determine whether or not self-efficacy mediates the relationship between child characteristics and parental stress in both mothers and fathers or both parents of children with ASDs. That is, three separate regressions (mothers, fathers, both parents) were conducted to determine these differences. Mediation

and moderation analyses were conducted using the PROCESS macro and procedure outlined in Hayes (2012). Based on the relationships between child characteristics and parental stress that are clarified in research question one, certain child characteristics (e.g., child behavior problems) were selected as predictors of this relationship. Furthermore, separate multiple regression analyses were conducted to determine if social support mediates or moderates the relationship between child behavior problems and parental stress in mothers, fathers, or both parents of children with ASDs. A significant relationship was identified between parental self-efficacy and stress, leading to three additional multiple regression analyses (mothers, fathers, or both parents) being conducted to determine whether or not social support moderates or mediates this relation.

Quantitative data was collected in the present study to better understand the relations between parenting stress and parental self-efficacy, perceived social support, and child characteristics in mothers and fathers of children with autism. First, descriptive data on all survey data, correlations between survey measures, and a one-way ANOVA with parent gender was conducted as a means of testing research question one. Next, a linear regression was conducted to determine how much variance was accounted for by the only childhood characteristic to significantly correlate with parent stress overall. Separate linear regressions were then conducted to determine if there were differences in the percentage of variance accounted between mothers and fathers, respectively. In terms of research question three, mediation analyses were conducted for the total parent sample, only mothers, and only fathers to determine if parental self-efficacy mediated the relationship between the singular significant child characteristic and parental stress. Similarly, mediation and moderation analyses were conducted for the total parent sample

and both genders of parents using perceived social support as the mediator and/or moderator. Lastly, mediation and moderation analyses were conducted for the three groups (all parents, mothers, fathers) with perceived social support as the mediator and/or moderator between parental self-efficacy and parental stress. Specific analyses and tables are described below.

Participants

In total, 65 packets were mailed to interested parents in eleven states. Participants consisted of 44 mothers ($n=26$) and fathers ($n=18$) of children with an ASD, for a total return rate of 68%. Most participants identified themselves as their child's biological mother ($n=24$; 54.5%) or father ($n=14$; 31.8%), with a minority of individuals reporting that they were adoptive mothers ($n=2$; 4.5%) or fathers ($n=4$; 9.1%). Participants primarily identified as White or Caucasian ($n=42$; 95.5%), with one participant identifying as Black (2.3%) and one participant identifying with more than one racial group (2.3%). Furthermore, the majority of participants were married or cohabitating with their partner ($n= 38$; 86.4%) and a smaller portion had divorced and never remarried ($n=5$; 11.4%) or had never been married ($n=1$; 2.3%).

Participants were also more likely to be employed ($n=35$; 79.5%) than unemployed ($n=9$; 20.5%). Most mothers and fathers in the present study obtained college degrees. Specifically, over thirty percent (34.1%, $n=15$) obtained Bachelor's degrees followed by Associate's degrees (22.7%, $n=10$), Master's degrees (9.1%, $n=4$), some graduate school (6.8%, $n=3$), and Doctorate degrees (2.3%, $n=1$). In addition, several participants reported that they attended college but have not obtained a degree (15.9%, $n=7$), attended a vocational or trade school (6.8%, $n=3$), or have graduated from

high school (2.3%, $n=1$). In terms of annual household income, 45.5% ($n=20$) reported an income at or exceeding \$75,000 a year, 20.5% ($n=9$) reported an income between \$50,000 and \$74,999 annually, 13.6% ($n=6$) reported an income between \$35,000 and \$49,999 annually, and 11.4% ($n=5$) reported an annual income below \$35,000. Four individuals (9.1%) preferred not to disclose information regarding their current income.

Only participants who have a son or daughter who reported that their child has received a diagnosis of an ASD were included in the final data analysis. This was verified by asking participants whether or not their child has ever been diagnosed with autism, Asperger's, or Pervasive Developmental Disorder- Not Otherwise Specified and to confirm which diagnosis their child received. Furthermore, only children who met criteria on the GARS of "very likely" having an ASD were included as an additional validity check of their diagnosis. Of the sample, only four participants were rated as non-communicative by their parent and required the four scale Autism Index calculation on the GARS. In terms of the PSI-4-SF, three participant's responses indicated somewhat defensive responding. This data was included in the final analysis. One participant omitted a response for an item on a subscale, which was consequently substituted with an average score given their other responses on that subscale as per author recommendations.

Participants who have multiple children with an ASD diagnosis were asked to complete the data while considering their child that they perceive to be most stressful. Target children in the study were between the ages of 3 and 24-years-old ($M=11.32$, $SD=5.50$) and consisted of 37 males (84.1% of the sample) and 7 females (15.9% of the sample). Additionally, the majority of children live with their parents full-time (97.7%,

$n=43$) rather than part-time (2.3%, $n=1$). Over 90% of the target children in this study were identified as Caucasian/White by their parents (90.9%, $n=40$), whereas Asian (2.3%, $n=1$), Hispanic/Latino/a (4.5%, $n=2$), and Multiracial (2.3%, $n=1$) comprised a much smaller portion of children. Diagnostically, parents predominately reported that their child had a diagnosis of Autistic Disorder (77.3%, $n=34$), followed by Asperger's Disorder (15.9%, $n=7$), and Pervasive Disorder Not Otherwise Specified (PDD-NOS) (6.8%, $n=3$). Parent reports confirmed that most children were diagnosed by a physician (43.2%, $n=19$) or a psychologist (40.9%, $n=18$). A smaller portion of the sample were diagnosed by both a psychologist and a physician (6.8%, $n=3$), an educational professional (2.3%, $n=1$), or another professional (4.5%, $n=2$). The majority of children were attending public school (86.6%, $n=39$) at the time the data was collected, with 29.5% in the regular education classroom full-time, 27.3% primarily in a special-education classroom, and 31.8% in a combination of special-education and regular education settings. The remainder of students attended a private school and received regular education services (2.3%, $n=1$), were no longer in school (4.5%, $n=2$), or were in "other" settings (4.5%, $n=2$). In terms of supplementary services for their child, participants were asked to identify which services their child with an ASD had received in the past year. Seventy-five percent ($n=33$) reported that their son or daughter received speech/language services in the past year followed by occupational therapy (63.6%, $n=28$), social skills training (54.5%, $n=24$), applied behavior analysis interventions (29.5%, $n=13$), and physical therapy (25%, $n=11$).

An a priori power analysis for a linear multiple regression- fixed model was conducted to determine the sample size needed in this study. To obtain an effect size

with a power of .80 for 4 predictors (perceived amount of social support, symptom severity, adaptive behavior, and self-efficacy), at a probability of .05, suggests a total sample size of 43 individuals. Similarly, a post-hoc power analysis for an omnibus multiple regression was conducted to verify achieved power given the current sample size. Using the same parameters previously specified, the analysis yielded an achieved power of .99. Both power analyses were conducted using G*Power software (Faul, Erdfelder, Buchner, & Lang, 2009).

Main Analyses

Research question 1: Are there significant relations among parental stress and the following variables: parental self-efficacy, perceived social support, severity of child symptoms, child behavior problems, and child adaptive behavior skills? Do these relations differ when comparing mothers and fathers of children with ASDs?

Pearson's correlations were used to discern the relationships between parental stress and parent variables (parental self-efficacy, perceived social support) and child characteristics (severity of symptoms, child behavior problems, and child adaptive behavior skills) for both maternal and paternal participants. The only parent variable that had a strong relationship with parental stress (PSI) was parental self-efficacy (PSOC), ($r=-0.66, p<.01$). Similarly, the only child characteristic to produce a significant correlation to parenting stress was child behavior problems (BSI on BASC), ($r=-0.39, p<.01$). A correlation matrix of these correlations is provided below (Table 1).

Table 1. Correlation Matrix of Parental Stress and Independent Variables.

	PSI	PSOC	FSS	GARS	BSI on BASC	ASI on BASC
Parenting Stress Index (PSI)	---					
Parent Sense of Competency Scale (PSOC)	-.66**	---				
Family Support Scale (FSS)	.04	-.09	---			
Gilliam Autism Rating Scale (GARS)	.28	-.38*	-.04	---		
Behavior Symptom Index of the BASC	.39**	-.15	.04	.11	---	
Adaptive Symptom Index of the BASC	-.15	.12	.01	-.03	-.49**	---

Note. * $p < 0.05$, ** $p < 0.01$ (two-tailed).

Next, comparisons were made between all survey data utilizing a one-way analysis of variance (ANOVA) between mothers and fathers of children with an ASD (Table 2). Results indicated that mothers ($M=1.39$, $SD= 0.85$) reported experiencing significantly more stress than fathers ($M= 0.75$, $SD= 0.90$), $F(1, 42)= 5.74$, $p < .05$. The only significant difference between the child characteristics was found between parental reports of behavior problems. Specifically, mothers ($M=1.54$, $SD= 0.82$) reported significantly more behavioral problems than fathers ($M= 0.94$, $SD= 0.62$) of children with ASD in the present study, $F(1, 42)= 6.79$, $p < .05$. Of note, the difference between maternal and paternal levels of parental competence were approaching borderline significance, $F(1, 42)= 3.39$, $p= 0.07$. In this comparison fathers reported higher levels of

parental competence ($M=0.32$, $SD= 1.03$) than their female counterparts ($M=-0.22$, $SD= 0.93$).

Table 2. Means, Standard Deviations, and One-Way Analysis Of Variance (ANOVA) Comparing Maternal and Paternal Survey Responses.

Variable	Fathers <i>N</i> =18	Mothers <i>N</i> =26	<i>F</i>	Sig. (2-tailed)
Parent Sense of Competency Scale (PSOC)	.32 (1.03)	-.22(.93)	3.39	.07
Family Support Scale (FSS)	-.07 (1.00)	.05 (1.01)	.15	.70
Parenting Stress Index (PSI)	.75 (.90)	1.39 (.85)	5.74	.02*
Gilliam Autism Rating Scale (GARS)	.07 (.99)	.25 (.83)	.40	.53
Behavior Symptom Index of the BASC	.94 (.62)	1.54 (.82)	6.79	.01*
Adaptive Symptom Index of the BASC	-1.49 (.47)	-1.86 (.89)	2.58	.12

Note. * $p<.05$. Values in parentheses indicate SD.

Research question 2: Which child characteristics contribute the most to parental stress for parents of children with ASDs? Does this differ for mothers and fathers?

Given that behavioral problems was the only child characteristic that significantly correlated with parental stress, it was the only variable entered into a linear regression. Overall, behavioral problems appears to account for 15.1% of the variance ($r^2= 0.151$, $p<.01$), suggesting other variables may be larger contributors to parental stress than severity of problem behaviors. Additional linear regressions were conducted for fathers

and mothers, respectively. However, neither variable significantly predicted parental stress.

Research question 3: Does parental self-efficacy mediate the relationship between child characteristics and parental stress for mothers, fathers, or both parents of children with ASDs?

Mediation analyses were ran utilizing the PROCESS macro (Hayes, 2013) to determine if parental self-efficacy mediated the relationship between behavior problems and parental stress for mothers, fathers, or both parents together. The initial mediation analysis illustrated no significant mediating relationship between problem behaviors and parental stress given parental self-efficacy among parents, $b = -0.19$, $t = -0.94$, $p = 0.35$. However, both parental self-efficacy and behavioral problems predicted parental stress. Specifically, the analysis revealed a significant inverse relationship between parental self-efficacy and stress, $b = -0.57$, $t = -5.54$, $p < .01$. That is, as self-efficacy increases, parental stress decreases. Conversely, behavior problems were found to have a significant positive relationship with parental stress ($b = 0.34$, $t = 2.66$, $p < .01$), indicating that the more problem behaviors present, the more likely it is that the parent is experiencing higher degrees of stress related to parenting. This model accounted for 52.3% of the variance in parental stress ($r^2 = 0.52$, $p < .01$). The total effects model illustrated that behavioral problems significantly predicts parental stress, $b = 0.45$, $t = 2.70$, $p < .01$. This model accounted for 15.1% of the variance in parental stress ($r^2 = 0.15$, $p < .01$). There was no significant indirect effect of parental self-efficacy on the relationship between behavioral problems and parental stress as determined through a boot strapping analysis, $b = 0.11$, BCa CI $\{-0.14, 0.33\}$. The mediation model is depicted in Figure 1 below.

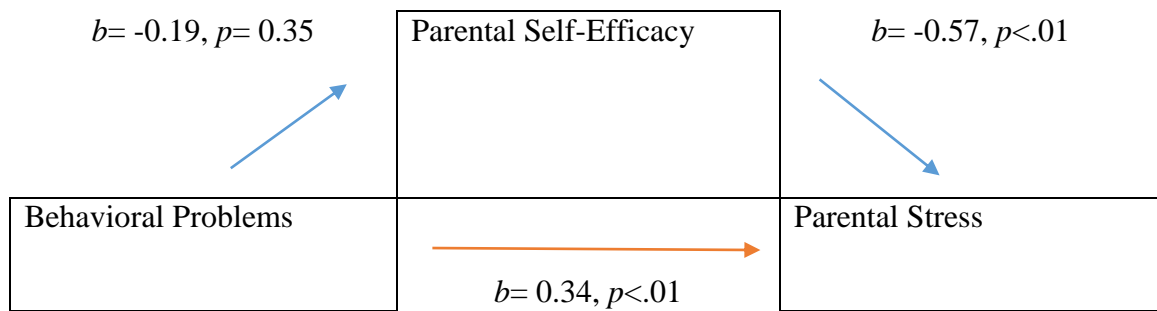


Figure 1. Mediation Model of Parents of Parental Self-efficacy, Behavior Problems, and Parental Stress in Children with ASDs.

Separate mediation analyses were conducted to examine the relationship among these variables for mothers and fathers. In terms of mothers, behavioral problems did not significantly predict parental self-efficacy, $b = -0.14, t = -0.57, p = 0.57$. Unlike the total parent sample, behavior problems was not a significant contributor to parental stress for mothers, $b = 0.25, t = 1.73, p = 0.10$. However, parental self-efficacy significantly predicted parental stress in this model, $b = -0.49, t = -3.65, p < .01$, indicating that as parental self-efficacy increases, parenting stress decreases for mothers. This model accounted for 38% of the variance in mother's parental stress ($r^2 = 0.38, p < .01$). Bootstrapping analysis found no significant indirect effect of parental self-efficacy on parental stress via problem behaviors, $b = 0.07, \text{BCa CI } \{-0.19, 0.34\}$. The mediation model is depicted in Figure 2 below.

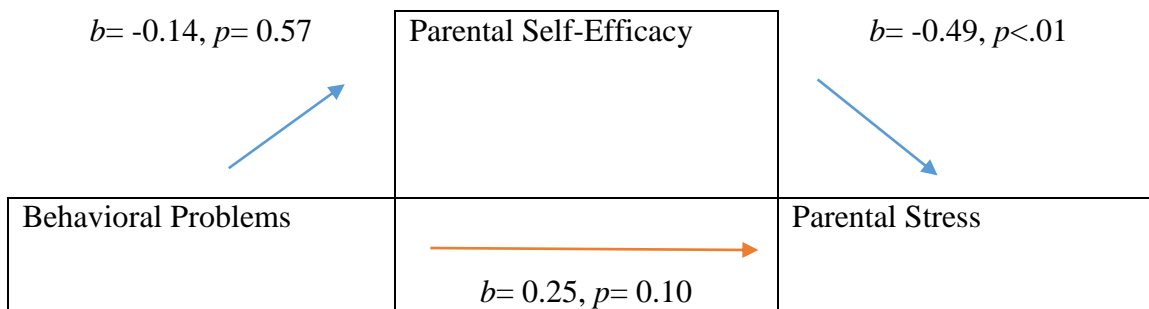


Figure 2. Mediation Model of Parental Self-efficacy, Behavior Problems, and Parental Stress in Mothers ($N= 26$) of Children with ASDs.

Fathers demonstrated similar results to their female counterparts. First, behavioral problems did not significantly predict parental self-efficacy, $b = 0.09, t = 0.16, p = 0.87$. Parental self-efficacy significantly predicted parental stress for fathers ($b = -0.63, t = -2.97, p < .01$), whereas child behavior problems did not significantly predict father's parental stress, $b = 0.47, t = 1.27, p = 0.22$. Similar to the other mediation models, no significant interaction was found between behavior problems and parental stress via parental self-efficacy for fathers as determined by a boot strapping analysis, $b = -0.06, \text{BCa CI } \{-0.80, 0.49\}$. This model accounted for 60% of the variance of father's parental stress ($r^2 = 0.60, p < .05$). The mediation model for fathers is depicted in Figure 3 below.

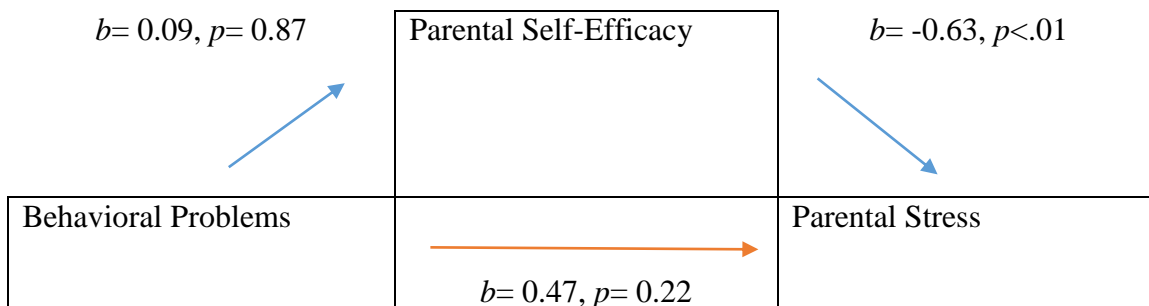


Figure 3. Mediation Model of Parental Self-efficacy, Behavior Problems, and Parental Stress in Fathers ($N= 18$) of Children with ASDs.

Research question 4: Does perceived social support mediate or moderate the relationship between child characteristics and parental stress in mothers, fathers, or both parents of children with ASDs?

The PROCESS macro (Hayes, 2013) was used to determine if perceived social support mediated or moderated the relationship between behavior problems and mothers, fathers, or both mothers and fathers of children with ASDs. In the initial mediation model, results revealed that behavior problems did not significantly predict perceived social support for the combined parent group, $b= 0.05, t= 0.28, p= 0.78$. Although behavior problems significantly predicted parental stress in the next step of the analysis ($b= 0.45, t= 2.64, p< .05$), social support was not a significant predictor parental stress for the combined parent group, $b= 0.02, t= 0.18, p= 0.86$. This model accounted for 15% of the variance in parental stress for this group ($r^2= 0.15, p< .05$). A bootstrapping analysis did not support the presence of an indirect effect of perceived social support on the relationship between behavior problems and parental stress, $b= 0.001, BCa CI \{-0.04, 0.05\}$. Figure 4 depicts this mediation model.

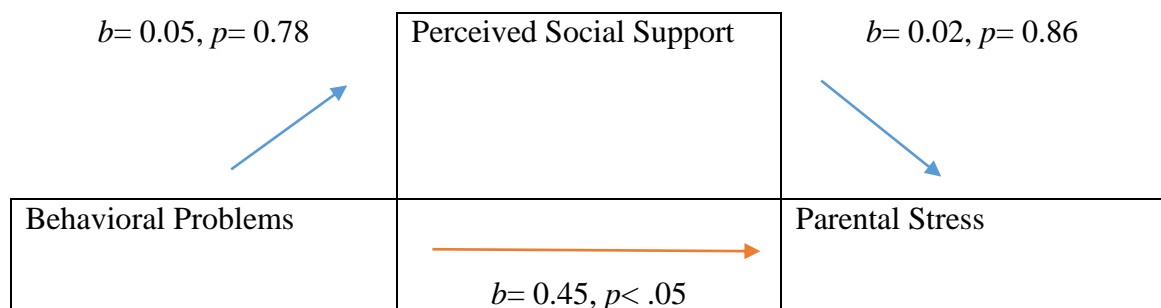


Figure 4. Mediation Model of Social Support, Behavior Problems, and Parental Stress in Parents of Children with ASDs ($N=44$).

The same mediation analysis was conducted for both mothers and fathers. Interestingly, in both groups of parents no significant predictors were identified in the mediation analysis. Behavioral problems did not significantly contribute to perceived social support for mothers or fathers, $b= 0.06, t= 0.33, p= 0.75$ and $b= -0.07, t= -0.13, p= 0.90$, respectively. The second step of the mediation model did not support significant contributions from perceived social support ($b= 0.04, t= 0.21, p= 0.83$) or behavioral problems ($b= 0.32, t= 1.48, p= 0.15$) to parental stress for mothers. For fathers, the mediation model yielded similar results. Parental stress was not significantly predicted by perceived social support ($b= -0.02, t= -0.12, p= 0.91$) or problem behaviors ($b= 0.41, t= 0.81, p= 0.43$) in the paternal sample. Due to the lack of significant relations within this model, no mediational relationships were possible. Results for these analyses for mothers and fathers are individually shown in Figures 5 and 6.

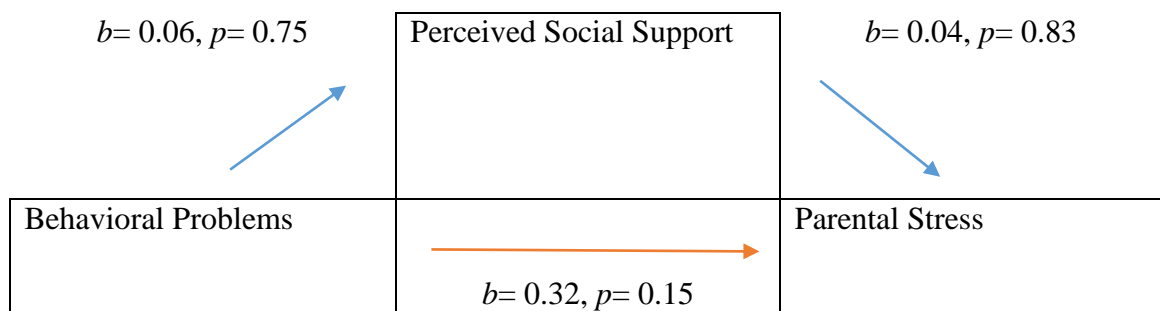


Figure 5. Mediation Model of Social Support, Behavior Problems, and Parental Stress in Mothers ($N=26$).

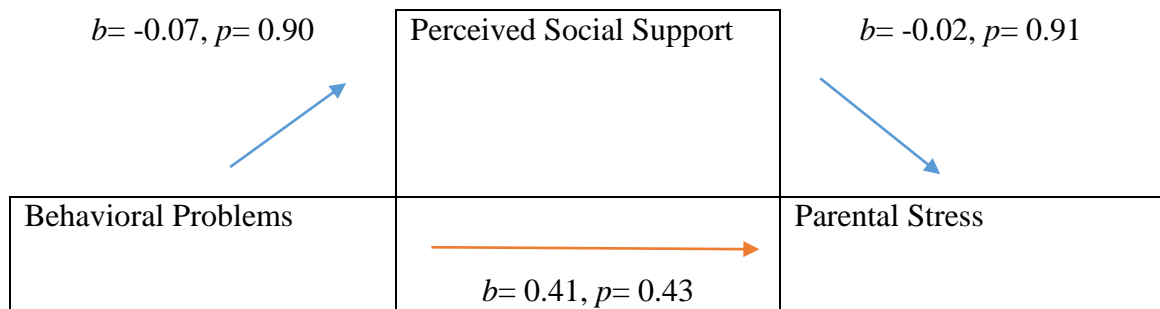


Figure 6. Mediation Model of Social Support, Behavior Problems, and Parental Stress in Fathers (N=18).

Moderation analysis of social support on the relationship between behavior problems and parental stress was conducted using a multiple regression. Although behavioral problems significantly predicted parenting stress in the model ($b= 0.45$, $SE_b= 0.18$, $t= 2.49$, $p<.05$), the regression did not support the presence of significant contributions from perceived social support ($b= 0.01$, $SE_b= 0.14$, $t= 0.95$, $p= 0.94$) or the interaction between behavior problems and social support ($b= -0.09$, $SE_b= 0.24$, $t= -0.36$, $p= 0.72$). Table 3 illustrates these results below.

Table 3. Regression Analysis of the Moderating Effect of Perceived Social Support related to Parental Stress and Problem Behaviors of Parents of Children with ASDs (N=44).

	<i>B</i>	<i>SE β</i>	<i>t</i>	<i>p-value</i>
Constant	1.23	.14	8.00	$p< .001$
Perceived Social Support (FSS)	.01	.14	.07	$p= .95$
Behavior Problems (BSI)	.45	.18	2.49	$p< .05$
FSS x BSI	-.09	.24	-.36	$p= .72$

Note. $R^2= 0.16$

Separate moderation analyses were conducted for mothers and fathers to determine if perceived social support moderated the relationship between behavior problems and parenting stress. Neither the model for mothers ($R^2= 0.11$, $F(3, 22) = 0.91$, $p= 0.45$) nor the model for fathers ($R^2= 0.11$, $F(3, 14) = 0.21$, $p= 0.89$) yielded significant results. Table 4 depicts the results for mothers and fathers.

Table 4. Regression Analysis of the Moderating Effect of Perceived Social Support related to Parental Stress and Problem Behaviors.

	Fathers (N=18)				Mothers (N=26)			
	<i>B</i>	<i>SE β</i>	<i>T</i>	<i>p-value</i>	<i>B</i>	<i>SE β</i>	<i>t</i>	<i>p-value</i>
Constant	.74	.25	3.03	$p<.01$	1.40	.19	7.18	$p<.01$
Perceived Social Support (FSS)	-.07	.23	-.31	$p= .76$	-.02	.21	.10	$p= .92$
Behavior Problems (BSI)	.48	.61	.78	$p= .45$.29	.21	1.35	$p= .19$
FSS x BSI	-.24	.41	-.58	$p= .57$	-.16	.50	-.33	$p= .75$

Note. $R^2= 0.11$ for fathers and mothers.

Research question 5: Does social support moderate or mediate the relationship between parental self-efficacy and stress in mothers, fathers, or both parents of children with ASDs?

Given the statistically significant results produced from previous analyses of parental self-efficacy and stress, additional mediation and moderation analyses were conducted to determine if perceived social support influenced the relationship between these variables. An analysis of all participants found that parental self-efficacy did not

yield a statistically significant contribution to perceived parental support, $b = -0.09$, $t = -0.47$, $p = 0.64$. The second step of the mediation analysis illustrated that parental self-efficacy was a significant predictor of parental stress ($b = -0.61$, $t = -6.50$, $p < .01$), suggesting that as parental self-efficacy, increases parental stress decreases. Social support did not have a unique and significant effect on parental stress, $b = -0.02$, $t = -0.15$, $p = 0.88$. This model accounted for approximately 44% of the variance, $r^2 = 0.44$ $p < .01$). Results this mediation analysis is shown in Figure 7.

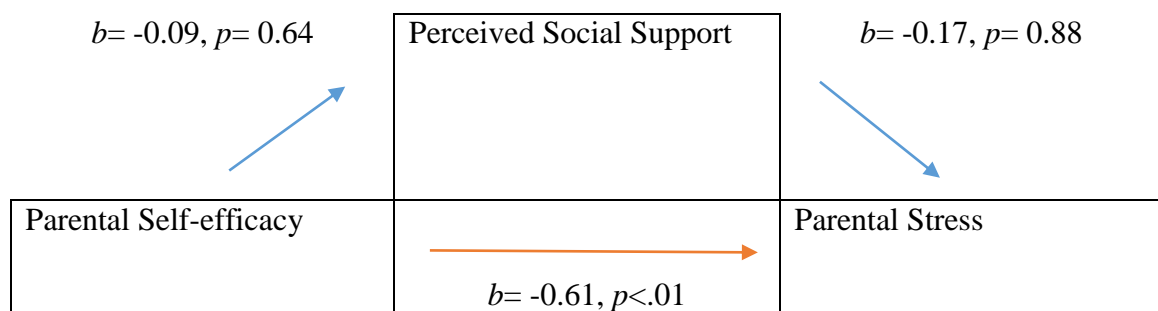


Figure 7. Mediation Model of Social Support, Parental Self-efficacy, and Parental Stress in Parents of Children with ASDs ($N=44$).

A secondary mediation analysis was conducted to determine whether or not fathers displayed similar relationships in terms of the role of perceived social support on parental self-efficacy and parental stress. In the first step of the analysis it was found that parental self-efficacy did not significantly contribute to perceived social support, $b = 0.04$, $t = 0.14$, $p = 0.89$. Similar to the analysis conducted on the total sample, parental self-efficacy ($b = -0.62$, $t = -3.84$, $p < .01$), but not perceived social support ($b = -0.003$, $t = -0.01$, $p = 0.99$) significantly contributed to parental stress. Overall, this model accounted for 50% of the variance in parental stress ($r^2 = .50$, $p < .01$) and is seen in Figure 8. Next, an identical third mediation analysis was conducted using data from mothers within the sample. Consistent with the other two models, parental self-efficacy did not significantly

contribute to perceived social support, $b = -0.17, t = -0.61, p = 0.55$. The second step of the regression also produced results similar to those in the two previously conducted mediation analyses. That is, parental self-efficacy significantly predicted parental stress ($b = -0.53, t = -3.90, p < .01$) but perceived social support did not ($b = -0.03, t = -0.20, p = 0.84$). However, the model (Figure 9) was overall significant and accounted for 32% of the variance ($r^2 = .32, p < .01$).

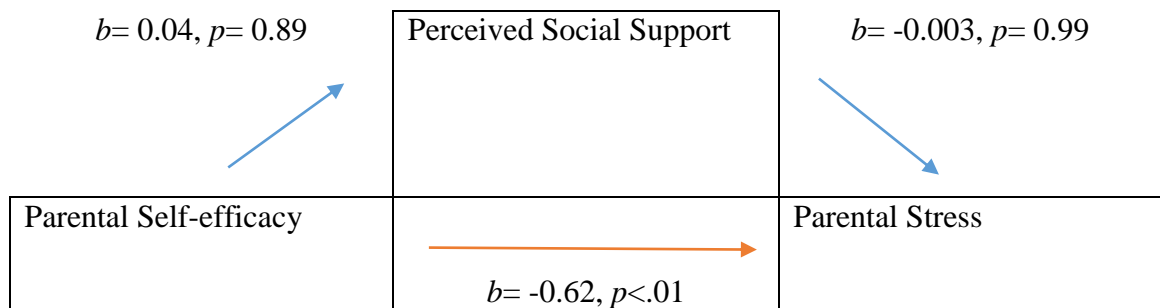


Figure 8. Mediation Model of Social Support, Parental Self-efficacy, and Parental Stress in Fathers of Children with ASDs (N=18).

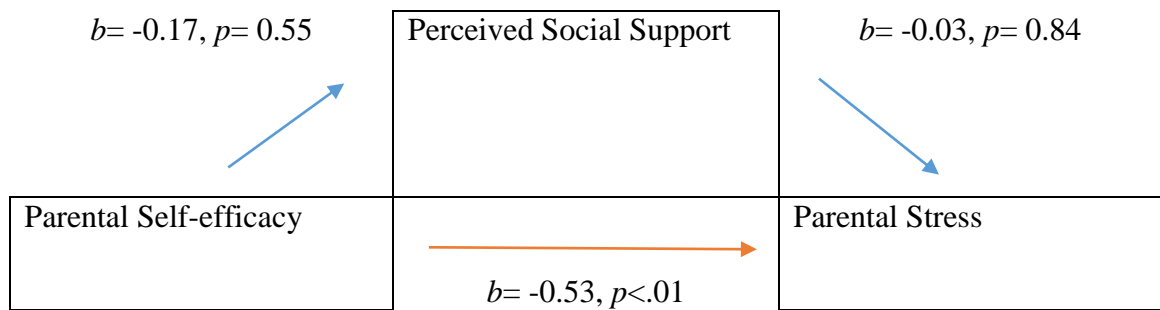


Figure 9. Mediation Model of Social Support, Parental Self-efficacy, and Parental Stress in Mothers of Children with ASDs (N=26).

Next, a moderation analysis was conducted to help discern if perceived social support moderated the relationship between parental self-efficacy and parental stress for all of the parents in the sample, only mothers, or only fathers. When all parent participants were used this model was statistically significant, $R^2 = 0.44, F(3, 40) = 13.64$,

$p < .01$. Parental self-efficacy significantly predicted parenting stress in the model ($b = -0.61$, $SE_b = 0.11$, $t = -5.52$, $p < .01$), the regression did not support the presence of significant contributions from perceived social support ($b = -0.03$, $SE_b = 0.13$, $t = -0.19$, $p = 0.85$) or the interaction between parental self-efficacy and social support ($b = 0.02$, $SE_b = 0.14$, $t = 0.14$, $p = 0.89$). Table 5 illustrates these results below.

Table 5. Regression Analysis of the Moderating Effect of Perceived Social Support related to Parental Stress and Parental Self-efficacy in Parents of Children with ASDs (N=44).

	<i>B</i>	<i>SE β</i>	<i>t</i>	<i>p-value</i>
Constant	1.13	.11	9.89	$p < .001$
Perceived Social Support (FSS)	-.03	.13	-.19	$p = .85$
Parent Self-efficacy (PSOCS)	-.61	.11	-5.52	$p < .01$
FSS x PSOCS	.02	.14	.14	$p = .89$

Note. $R^2 = .44$

Separate moderation analyses were conducted for mothers and fathers, respectively. The moderation model for mothers ($R^2 = 0.33$, $F(3, 22) = 6.50$, $p < .01$) and fathers ($R^2 = 0.57$, $F(3, 14) = 11.21$, $p < .01$) were both statistically significant.

Comparisons of these two models revealed that both models were similar insofar that the models for both mothers ($b = -0.55$, $SE_b = 0.13$, $t = -4.34$, $p < .01$) and fathers ($b = -0.77$, $SE_b = 0.16$, $t = -4.78$, $p < .01$) produced significant main effects on parental stress.

However, perceived social support did not produce a statistically significant main effect in either paternal ($b = -0.10$, $SE_b = 0.29$, $t = -0.35$, $p = 0.73$) or maternal models ($b = -0.01$,

$SE_b = 0.17, t = -0.05, p = 0.96$). No significant interactions between perceived social support and parental self-efficacy were found in mothers ($b = -0.05, SE_b = 0.17, t = -0.31, p = 0.76$) or fathers ($b = 0.29, SE_b = 0.26, t = 1.12, p = 0.28$). Table 6 illustrates these results.

Table 6. Regression Analysis of the Moderating Effect of Perceived Social Support related to Parental Stress and Parental Self-Efficacy.

	Fathers (N=18)				Mothers (N=26)			
	<i>B</i>	<i>SE β</i>	<i>t</i>	<i>p-value</i>	<i>B</i>	<i>SE β</i>	<i>t</i>	<i>p-value</i>
Constant	.74	.17	4.30	$p < .01$	1.38	.16	8.65	$p < .01$
Perceived Social Support (FSS)	-.10	.29	-.35	$p = .73$	-.01	.17	-.05	$p = .96$
Parent Self-efficacy (PSOCS)	-.77	.16	-4.78	$p < .01$	-.55	.13	-4.34	$p < .01$
FSS x PSOCS	.29	.26	1.12	$p = .28$	-.05	.17	-.31	$p = .76$

Note. $R^2 = .57$ for fathers and $R^2 = .33$ for mothers

Summary of Findings

Overall, results suggested that parental self-efficacy and behavioral problems were significantly correlated with parental stress in the total parenting sample. When comparing mothers and fathers, results found that mothers reported that their children had significantly more behavior problems than fathers reported and reported experiencing significantly higher degrees of stress related to parenting than their male counterparts.

Despite there being differences between mothers and fathers, contributing factors to parental stress were relatively similar. Overall, child behavior problems was the only child characteristic to significantly contribute to parental stress explaining only a small

proportion of the variance for both mothers and fathers. Subsequent mediation analyses revealed that both parental self-efficacy and child problem behaviors accounted for a statistically significant amount of variance in parental stress for the total parent sample. However, individual mediation analyses for fathers and mothers only revealed significant contributions from parental self-efficacy. Moreover, parental self-efficacy did not mediate the relationship between child problem behaviors and parental stress. Mediation and moderation analyses examining the role of social support in the relationship between child behavior problems and parental stress revealed that child behavior problems was a significant predictor of parental stress in both moderation and mediation analyses in the total sample. Specifically, the more behavior problems reported by the parents, the higher levels of parental stress that were also reported. However, there were no other significant results in similar mediation and moderation analyses conducted for the group of mothers or the group of fathers. Lastly, social support was examined as a potential mediator or moderator between parental self-efficacy and parental stress. Parental self-efficacy predicted parental stress in both mediation and moderation analyses in the total parent group, father group, and mother group. That is, higher self-efficacy scores were significantly more likely to be associated to lower levels of parental stress in this sample. Parental self-efficacy accounted for the largest proportion of variance of all of the predictors, accounting for over 50% of the variance in some of these analyses.

CHAPTER V

DISCUSSION

The final chapter will synthesize and interpret the findings of the present study given the relevant literature. Each hypothesis will be discussed individually before being incorporated into the broader findings. Next, the findings will be reviewed in terms of their application to clinical practice. Lastly, limitations of the study and directions for future research will be reviewed prior to the conclusion of the present study.

The purpose of this study was to examine the role that child characteristics (behavior problems, adaptive behavior skills, and severity of symptoms) and parent characteristics (parental self-efficacy, perceived social support) had in parental stress of parents of children with ASDs. This study also aimed to determine if parental stress experienced by mothers and fathers were accounted for similar or diverse aspects of having a child with an ASD. Mediating and moderating effects of social support on the relationship between child behavior problems and parental stress and between parental self-efficacy and parental stress were examined. In addition, the mediating effects of parental self-efficacy on the relationship between child behavior problems and parental stress was also analyzed.

Major Findings

In the first research question, the author sought to determine if there were significant relationships between parental stress and the other variables of interest

(parental self-efficacy, perceived social support, severity of child symptoms, child behavior problems, and child adaptive behavior) and if there were differences in these relationships between maternal and paternal respondents. Findings suggested that parental self-efficacy and child problem behaviors were strongly correlated with parental stress in both mothers and fathers of children with ASDs. . Specifically, parental self-efficacy had an inverse relationship with parental stress, whereas child behavior problems were positively correlated with parental stress. A oneway-ANOVA revealed significant differences between parental stress levels and child problem behaviors between mothers and fathers, with mothers reporting experiencing significantly greater parental stress and child problem behaviors than fathers. This was consistent with past research that found support for greater maternal stress in parent samples of children with ASDs (Little, 2002; Herring et al., 2006). Consistent with LeCavalier and colleagues (2006), the results of the current study did not find a significant relationship between child adaptive behavior and parental stress whereas problem behaviors accounted for a large proportion of parenting stress reported by participants.

The second research question aimed to determine which child characteristic (adaptive behavior, symptom severity, or problem behavior) contributed the most to parental stress in the research sample and if that differed between mothers and fathers of children with ASDs. The only child characteristic that significantly contributed to the variance of parental stress in mothers and fathers of children with ASDs was child problem behaviors. Regression analysis demonstrated that child behavior problems only account for 15% of the variance in parental stress levels in the total parent sample, suggesting the presence of additional contributory factors. This was significantly less

than what was accounted for in previous studies. For instance, Lecavalier et al. (2006) found that problem behaviors accounted for 72% of the variance when stress was entered in step one of a step-wise regression and problem behaviors were entered into step 2 of the analysis. Of note, Lecavalier et al. (2006) consisted primarily of maternal ratings (86%) of young children (69% in the third grade or younger), which may account for some of this disparity. However, these findings are consistent with past research that suggested that child behavior problems was a stronger predictor of parental stress in parents of children with ASDs than adaptive behavior problems (Lecavalier et al., 2006) or symptom severity (Phetrasuwan & Miles, 2009). Moreover, these results are consistent with past studies with parents of relatively young children with ASDs (Davis & Carter, 2008; Hastings et al., 2005) illustrating some support for generalizable results to parents of older children on the autism spectrum that reside within their home.

Third, this study sought to determine if parental self-efficacy mediated the relationship between child characteristics for parental stress in mothers, fathers, or both mothers and fathers of children with ASDs. Additional linear regressions were used to better discern the role that parental self-efficacy may have in the relation between child problem behaviors and parental stress. Analyses revealed that behavior problems and parental self-efficacy were both significant predictors of parental stress for the total sample. However, only parental self-efficacy was a significant predictor of parental stress when linear regressions were conducted for the female and male participants separately. Although Hastings and Brown (2002) found mediating and moderating effects of self-efficacy in mothers and fathers of children with ASD on paternal anxiety and maternal depression, the present study found parental self-efficacy has a direct effect on parental

stress. It may be that parental stress is a narrower construct than depression and anxiety, which both may be influenced by parental stress levels. These differences may also be attributed to differences in measures of parental self-efficacy between these studies. Furthermore, an analysis of the model for fathers suggested that parental self-efficacy accounted for a larger proportion of parental stress than for mothers. Similar to Lai (2013), the present research failed to find support for the moderation or mediation of problem behaviors and parenting stress by parental self-efficacy. However, results varied from the Lai (2013) study, which may indicate sample differences (e.g., cultural, larger paternal sample) in the experiences of parental stress in mothers and fathers of children with ASDs. Nonetheless, parental self-efficacy was a large predictor of parental stress for the total parent sample, father group, and mother group, indicating that high self-efficacy in the realm of parenting was associated with lower levels of parenting stress in parents of children with ASDs.

Although child behavior problems and parental self-efficacy contributed to models of parenting stress in our parent sample, it appears that these factors independently influence stress related to parenting experienced by mothers and fathers. Importantly, this study provides insight regarding whether or not parental stress in mothers and fathers of children with ASDs are relatively homogenous or heterogeneous factors.

Lastly, this study explored whether or not perceived social support mediated or moderated the relationship between child characteristics and parental stress in mothers, fathers, or the combined sample of parent respondents. Results suggested that perceived social support did not mediate or moderate the relationship between problem behaviors

and parental stress in mothers, fathers, or the both mothers and fathers. Although there is no research to the author's knowledge that specifically examines the role of perceived social support in light of the specific child characteristics (e.g., problem behaviors), the findings of this study may be inconsistent with Boyd (2002). Specifically, Boyd (2002) found that mothers of children with ASDs who reported higher levels of stress were more likely to pursue social supports. It may be that the participants in the present study who reported experiencing high levels of stress sought more social supports than their more relaxed parenting peers but did not find them helpful in providing support. Similarly, the majority of the literature examines whether or not a parent (primarily mothers of young children) report seeking out social supports and how many supports they have tried rather than how supported they feel by the social supports in their lives (Bromley et al., 2004; Boyd, 2002, Tway et al., 2007) or does not examine parental stress as an outcome variable (e.g., Dunn et al., 2001; Weiss, 2002, Ekas et al., 2010). Thus, the present study contributes valuable insight into how parents are perceiving the parental supports that they are seeking.

Implications for Practice

Results of the present study indicate that problem behavior in children and parental self-efficacy are significant contributors to parental stress in both mothers and fathers of children with ASDs. Currently, little is known regarding how parental stress manifests in fathers compared to their female counterparts. The findings that parental self-efficacy significantly contributed to a larger proportion of parental stress in fathers compared to mothers may provide valuable information in how to best structure parenting interventions for families affected by ASDs. Bandura (1997) contended that self-efficacy

can be bolstered through vicarious experiences, verbal persuasion, physiological states, and especially, performance experiences. Parent training for mothers and fathers of children with ASD may be particularly helpful if parents are taught specific parenting skills with support of a professional and feel successful and confident in utilizing those skills independently. Moreover, support from other parents who have experienced success in difficult areas of parenting a child with an ASD may strengthen parental self-efficacy through verbal persuasion or vicarious experiences from parent peers. Although parent support groups are relatively prevalent for caregivers of children with ASDs, these findings may support the use of more targeted conversations and sharing from parents with the intention of increasing parenting self-efficacy rather than providing social support. Given the plethora of interventions for parents of children with ASDs to choose from, the present results lend support for interventions that aim to improve parental self-efficacy similar to those noted in previous research (Sofronoff & Farbotko, 2002; Keen, Couzens, Muspratt, & Rodgers, 2010).

The large influence of child problem behavior on parent stress in the present study also provides useful information in formulating future practices for families of children with ASDs. Although this does not account for the overlap between many adaptive behavior skills and problem behaviors, it may suggest that it is helpful for practitioners to discuss with parents which behaviors they find most problematic in formulating treatment plans and guiding interventions. In addition, practitioners should consider assessing parent variables (e.g., parenting stress, parenting self-efficacy) in addition to child outcome variables when guiding treating ASDs to access maximum treatment gains.

Limitations and Future Research

There were several limitations that may affect the generalizability of the present results. First, parent participants were recruited through a snow-ball sampling method and many were already accessing forms of support or formal services for their child with an ASD that lead to their recruitment (e.g., social support groups). It may be that these parents had fewer social support needs and overall lower levels of stress as a product of being involved in such services. Second, although participants resided in many different states, the population was relatively well-educated and predominately White. These demographic differences may have served as resiliency factors and provided participants with greater access to formal or informal sources of support and professional interventions than other families affected by ASDs. Future research should include a large, diverse sample to further support these findings.

Third, the current study only utilized a measure of parenting stress as the dependent variable rather than multiple measures of various types of stress that may be influencing families. As mentioned previously, raising a child with an ASD is often associated with increased financial cost (Lord & Bishop, 2010; Lavelle et al., 2014) and relational stressors (Hartley et al., 2010) that may not be accounted for by a measure that only assesses stress related to parenting. Research that includes diverse, robust measures of parenting stress would likely provide much needed information regarding stress in families of children with ASDs.

Fourth, measures used in this study were all self-report assessments, which may have biased the present results. It may be possible that parents experiencing stress from raising a child with an ASD over report their child's behaviors, severity of symptoms, or

adaptive behavior skills. Alternatively, elevated levels of stress may lead parents to being hypersensitive to their child's unique characteristics and result in keen abilities to provide an accurate assessment. Nevertheless, alternative methods of measuring the aforementioned variables of interest would likely be helpful in supporting the present findings. Observational, physiological data (e.g., measuring cortisol levels to reflect stress), and qualitative data may be useful ways to deepen the understanding of these relationships.

Lastly, the present study's sample included mothers and fathers of different children with ASDs, limiting the power of comparisons between maternal and paternal reports within the same family structure. It is possible that more pronounced differences exist in comparing factors that influence parental stress of mothers and fathers who are co-parenting but were not detected in the present study. Within subjects designs that measured the same constructs within couples would provide helpful information regarding how mothers and fathers may be affected by raising the same child with an ASD.

Conclusion

Parenting a child with an ASD can present with unique challenges unknown to other parents. The present study builds upon the current literature by noting the prominent role that child behavior problems and parental self-efficacy has in exacerbating or assuaging parental stress, respectively. Although the results were fairly consistent between mothers and fathers, further research is needed to better discern how families are affected by parenting a child with an ASD. This is not only critical to promoting familiar well-being but also ensuring that comprehensive interventions are

successfully translatable into practice by families. By taking strides to augment current treatment practices through greater understanding of the factors facing families affected by ASDs providers can truly make great strides in supporting and improving the lives of these individuals.

APPENDICES

APPENDIX A

RECRUITMENT LETTER

Dear Parent,

You are invited to participate in an important research study. The purpose of this study is to examine the role of child characteristics, self-efficacy, social support and stress levels of parents of children with an autism spectrum disorder (ASD). Your responses will be helpful in assisting the researchers to evaluate trends so as to respond more effectively to the needs of parents of children with an ASD. This is a mail-based study. Participating parents will be asked to complete four self-reported paper and pencil questionnaires and a demographic survey. You should be able to complete this study within 30-45 minutes. Your participation in this study is greatly appreciated and is completely voluntary.

Name of Study: The Role of Child Characteristics, Parental Self-efficacy, and Social Support on Parental Stress in Mothers and Fathers of Children with Autism Spectrum Disorders

Institution: University of North Dakota (IRB# 201405-462)

Location: Mail-based study, no geographic limitation within the United States

Eligibility Criteria: Parents of children with a diagnosis of ASD who reside in their home

Principle Investigator: Lindsey DeVries, M.S.

Contact Information: Lindsey.devries@my.und.edu. Please include your name and mailing address in the contact email.

If you are interested in participating, please contact me, Lindsey DeVries, by email at Lindsey.devries@my.und.edu. Please include your name, mailing address, and the age of your child with an ASD. If you have more than one child diagnosed with an ASD, please select the child that you believe to cause you the most stress. Thank you for your time.

Sincerely,

Lindsey DeVries, M.S.

APPENDIX B

RECRUITMENT FLYER

ARE YOU THE PARENT OF A CHILD WITH AN AUTISM SPECTRUM DISORDER?

Researchers at the University of North Dakota are seeking parents of children of any age who:

- Have a diagnosis of Asperger's, Autism, or PDD-NOS
- Reside in the parent's home

Information about this research:

- Requires one parent (fathers preferred) to complete several paper and pencil measures
- Approximate completion time is 45 minutes
- Participants are entered into a raffle for one \$50 Amazon gift card

Please contact Lindsey DeVries at lindsey.devries@my.und.edu or 307-267-6283 for more information

ASD Parent Study
Lindsey.devries@my.und.edu

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APPENDIX C

STUDY INFORMATION SHEET

THE UNIVERSITY OF NORTH DAKOTA

TITLE: *The Role of Child Characteristics, Parental Self-efficacy, and Social Support on Parental Stress in Mothers and Fathers of Children with Autism Spectrum Disorders*

PRIMARY INVESTIGATOR: *Lindsey DeVries, M.S.*

DEPARTMENT: *Counseling Psychology and Community Services*

STATEMENT OF RESEARCH

A person who is to participate in the research must give his or her informed consent to such participation. This consent must be based on an understanding of the nature and risks of the research. This document provides information that is important for this understanding. Research projects include only subjects who choose to take part. Please take your time in making your decision as to whether to participate. If you have questions at any time, please ask.

WHAT IS THE PURPOSE OF THIS STUDY?

You are invited to be in a research study about parent experiences raising a child with an autism spectrum disorder (ASD) because you have a son or daughter that has been diagnosed with an ASD. The purpose of this research study is to better understand how mothers and fathers of children with ASDs perceive their own parenting abilities, social support networks, child characteristics, and experience stress.

HOW MANY PEOPLE WILL PARTICIPATE?

Approximately 200 people will take part in this study nationwide.

HOW LONG WILL I BE IN THIS STUDY?

Your completed data for this study will be stored for approximately 7 years, as per guidelines established by the American Psychological Association. It will take 30 to 45 minutes to complete the survey items.

WHAT WILL HAPPEN DURING THIS STUDY?

Individuals will be asked to complete a number of survey items regarding their experiences and perceptions of raising a child with an ASD. Participants will be given a packet of survey materials that they will complete along with a prepaid envelope. Participants are free to skip any questions that she would not prefer to answer. Packets will be asked to mail the completed packets back to the examiner.

WHAT ARE THE RISKS OF THE STUDY?

There may be some risk from being in this study. For example, you may experience frustration that is often experienced when completing surveys. Some questions may be of a sensitive nature, and you may therefore become upset as a result. However, such risks are not viewed as being in excess of “minimal risk”

If, however, you become upset by questions, you may stop at any time or choose not to answer a question. If you would like to talk to someone about your feelings about this study, you are encouraged to contact, the National Suicide Prevention Lifeline at 1-800-273-8255.

WHAT ARE THE BENEFITS OF THIS STUDY?

You may not benefit personally from being in this study. However, we hope that, in the future, other people might benefit from this study because of the knowledge gained from the results.

WILL IT COST ME ANYTHING TO BE IN THIS STUDY?

You will not have any costs for being in this research study.

WILL I BE PAID FOR PARTICIPATING?

You will not be paid for being in this research study.

WHO IS FUNDING THE STUDY?

The University of North Dakota and the researcher are receiving no payments from other agencies, organizations, or companies to conduct this research study.

CONFIDENTIALITY

The records of this study will be kept private to the extent permitted by law. In any report about this study that might be published, you will not be identified. Your study record may be reviewed by Government agencies, the UND Research Development and Compliance office, and the University of North Dakota Institutional Review Board.

Any information that is obtained in this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by

law. You should know, however, that there are some circumstances in which we may have to show your information to other people. For example the law may require us to show your information to a court or to tell authorities if we believe you have abused a child or that you pose a danger to yourself or someone else. Confidentiality will be maintained by means of storing all data in a locked filing cabinet in the Department of Counseling Psychology and Community Services on the campus of the University of North Dakota. All information will be coded into participant numbers before it is entered to be analyzed. All electronic data will be saved on a flash drive and stored in the same filing cabinet as the survey data. Only the primary investigator will have access to the data. If we write a report or article about this study, we will describe the study results in a summarized manner so that you cannot be identified.

IS THIS STUDY VOLUNTARY?

Your participation is voluntary. You may choose not to participate or you may discontinue your participation at any time without penalty or loss of benefits to which you are otherwise entitled. Your decision whether or not to participate will not affect your current or future relations with the University of North Dakota.

CONTACTS AND QUESTIONS?

The researcher conducting this study is Lindsey DeVries. This study is a doctoral dissertation and a requirement for the partial fulfillment of a Doctor in Philosophy Degree. If you have questions, concerns, or complaints about the research please contact the researcher's dissertation chair and advisor, Rachel Navarro, PhD, at (701) 777-2635. You can also contact the researcher, Lindsey DeVries, at lindsey.devries@my.und.edu.

If you have questions regarding your rights as a research subject, you may contact The University of North Dakota Institutional Review Board at (701) 777-4279.

- You may also call this number about any problems, complaints, or concerns you have about this research study.
- You may also call this number if you cannot reach research staff, or you wish to talk with someone who is independent of the research team.
- General information about being a research subject can be found by clicking "Information for Research Participants" on the web site:
<http://und.edu/research/resources/human-subjects/research-participants.cfm>

APPENDIX D

DEMOGRAPHICS QUESTIONNAIRE (ADAPTED FROM MACDONALD, 2011)

Today's Date: ____ / ____ / ____
Month Day Year

1. What year were you born?

19 ____

2. What is your gender?

Male

Female

Other- Specify _____

3. Which racial group best describes you?

American Indian or Alaskan Native – Specify

Asian – Specify _____ (e.g., Chinese, Korean,
Indian)

Black or African American

Hispanic or Latino/a – Specify _____ (e.g., Mexican, Cuban)

Native Hawaiian or Pacific Islander

White or Caucasian

Other – Specify _____

More than one race – Specify _____

4. What is the highest grade in school that you completed?

Some high school

Completed high school or GED

Vocational, technical, trade, or business school beyond the high school level

Some college, but no degree

Associate degree

Bachelor's degree

Some graduate school

Master's degree

Doctorate degree

5. Are you currently employed?
- Yes
 - No
6. Which state do you currently live in? : _____
7. What is your partner status?
- Married or living with partner
 - Single- never married
 - Divorced- not remarried
 - Widowed- not remarried
8. How many individuals live in the household? _____
9. How many children (adult children included) live in the household? _____
10. Please answer the following questions regarding each of the children living in the household:

Child Gender	Child Age	Psychiatric diagnoses or physical disabilities (if applicable)

The following questions are about your child with an autism spectrum disorder. **If more than one of your children has an autism spectrum disorder, please answer these questions for the child who you perceive to be the most stressful.**

1. What is your relationship to your child?
- Biological mother
 - Biological father
 - Adoptive mother
 - Adoptive father
 - Legal guardian—Specify _____
2. What is your child's date of birth? : ____ / ____ / ____
- Month Day Year
3. What is your child's gender?
- Male
 - Female
 - Other- Specify _____

4. Does your child live with you _____?
- Full time
 - Part time
 - None of the time
5. Are you the primary caregiver for your child?
- Yes, I am the primary care provider of my child at least 80% of the time.
 - Yes, I am the primary care provider of my child at least 60% of the time.
 - No, I am the primary care provider of my child less than 20% of the time.
 - No, I am the primary care provider of my child less than 40% of the time.
 - My partner and I split care-giving responsibilities 50/50
6. Which racial group best describes your child? Please circle all that apply.
- American Indian or Alaskan Native – Specify _____
 - Asian – Specify _____ (e.g., Chinese, Korean, Indian)
 - Black or African American
 - Hispanic or Latino/a – Specify _____ (e.g., Mexican, Cuban)
 - Native Hawaiian or Pacific Islander
 - White or Caucasian
 - Other – Specify _____
 - More than one race – Specify _____
7. What diagnosis has your child received?
- Autistic Disorder
 - Asperger Syndrome or Asperger's Disorder
 - Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS)
8. Who diagnosed your child?
- Physician/ Medical doctor
 - Psychologist
 - Educational professional- Specify _____
 - Other- Specify _____
9. How old was your child when he or she received a diagnosis: _____
10. What is your child's placement in school?
- Public school- regular education classroom (mainstreamed)
 - Public school- special education classroom
 - Public school- a mixture of regular and special education classes
 - Private school- regular education classroom
 - Private school- special education classroom
 - Private school- a mixture of regular and special education classes
 - Home school
 - Other- Specify _____
 - N/A

11. If applicable, what grade is your child currently in? : _____
12. What interventions has your child received in the past year or your child is currently receiving? Please indicate all that apply.
- Applied Behavior Analysis (ABA) therapy
 - Speech therapy
 - Occupational therapy
 - Physical therapy
 - Social skills intervention
 - Other- please list any not mentioned above _____
13. What is your annual household income:
- Less than \$35,000
 - \$35,000-\$49,999
 - \$50,000-\$74,999
 - \$75,000 or above
 - Prefer not to respond
14. Do you receive additional financial coverage or funding for your child's needs and services? Please select all that apply:
- Private health insurance
 - Medicaid only
 - Other: _____
 - Medicaid Waiver

APPENDIX E

PARENTING STRESS INDEX- SHORT FORM (PSI-SF; ABIDIN, 1995)*

Parenting Stress Index-Short Form

SA= Strongly Agree A=Agree NS=Not Sure D=Disagree SD= Strongly Disagree

1. I often have the feeling I cannot handle things very well.
2. I find myself giving up more of my life to meet my children's needs than I ever expected.
3. I feel trapped by my responsibilities as a parent.
4. Since having this child, I have been unable to do new and different things.
5. Since having this child, I feel that I am almost never able to do things that I like to do.
6. I am unhappy with the last purchase of clothing for myself that I made.
7. There are quite a few things that bother me about my life.
8. Having a child has caused more problems than I expected in my relationship with my spouse (or male/female friend)
9. I feel alone and without friends.
10. When I go to a party, I do not usually expect to enjoy myself.
11. I am not as interested in people as I used to be.
12. I don't enjoy things as I used to.
13. My child rarely does things for me that make me feel good.
14. Sometimes I feel my child doesn't like me and doesn't want to be close to me.
15. My child smiles at me much less than I expected.
16. When I do things for my child, I get the feeling that my efforts are not appreciated very much
17. When playing, my child doesn't often giggle or laugh.
18. My child doesn't seem to learn as quickly as most children.
19. My child doesn't seem to smile as much as most children.
20. My child is not able to do as much as I expected.
21. It takes a long time and is very hard for my child to get used to new things.

For the next statement choose your response from the choices "1" to "5" below.

22. I feel that I am:
 1. Not very good at being a parent
 2. A person who has some trouble being a parent
 3. An average parent.
 4. A better than average parent
 5. A very good parent.
23. I expected to have closer and warmer feelings for my child than I do and this bothers me.

24. Sometimes my child does things that bother me just to be mean.
25. My child seems to cry or fuss more often than me.
26. My child generally wakes up in a bad mood.
27. I feel that my child is very moody and easily upset.
28. My child does a few things which bother me a great deal.
29. My child reacts very strongly when something happened that he/she doesn't like.
30. My child gets upset easily over the smallest things.
31. My child's sleeping or eating schedule was much harder to establish than I expected.

For the next statement choose your response from the choices "1" to "5" below.

32. I have found that getting my child to do something or stop doing something is:
 1. Much harder than I expected.
 2. Somewhat harder than I expected.
 3. About as hard as I expected.
 4. Somewhat easier than I expected.
 5. Much easier than I expected.

For the next statement, choose your response from the choices "10+" to "1-3".

33. Think carefully and count the number of things which your child does that bothers you. For example: dawdles, refuses to listen, is overactive, cries, interrupts, fights, whines, etc.

10+ 8-9 6-7 4-5 1-3

34. There are some things that my child does that really bothers me a lot.
35. My child turned out to be more of a problem than I expected.
36. My child makes more demands on me than do most children.

*This is a modified version of this measure intended for illustrative purposes only. The actual form of this measure is copyright protected and may vary in format. The actual form of the measure was utilized in data collection

APPENDIX F

FAMILY SUPPORT SCALE (FSS; DUNST ET AL., 1984)*

Listed below are people and groups that oftentimes are helpful to members of a family raising a young child. This questionnaire asks you to indicate how helpful each source is to *your family*. Please **circle** the response that *best describes* how **helpful** the people and groups have been to your family during the past 3 to 6 months. If a source of help has not been available to your family during this period of time, circle the NA (Not Available) response.

How **helpful** has each of the following been to you in terms of raising your child(ren)?

	Not Available	Not at All Helpful	Sometimes Helpful	Generally Helpful	Very Helpful	Extremely Helpful
1. My Parents	N/A	1	2	3	4	5
2. My spouse or partner's parents	N/A	1	2	3	4	5
3. My relatives/kin	N/A	1	2	3	4	5
4. My spouse or partner's relatives/kin	N/A	1	2	3	4	5
5. My spouse or partner	N/A	1	2	3	4	5
6. My friends	N/A	1	2	3	4	5
7. My spouse or partner's friends	N/A	1	2	3	4	5
8. My older child(ren)	N/A	1	2	3	4	5
9. Neighbors	N/A	1	2	3	4	5
10. Other parents	N/A	1	2	3	4	5
11. Co-workers	N/A	1	2	3	4	5
12. Parent group members	N/A	1	2	3	4	5
13. Social groups/clubs	N/A	1	2	3	4	5

14. Church members/minister	N/A	1	2	3	4	5
15. My family or child's physician	N/A	1	2	3	4	5
16. Early childhood Intervention	N/A	1	2	3	4	5
17. School/daycare Center	N/A	1	2	3	4	5
18. Professional helpers (social workers, therapists, teachers, etc.)	N/A	1	2	3	4	5
19. Professional agencies (public health, social services, mental health, etc.)	N/A	1	2	3	4	5
20. Respite care	N/A	1	2	3	4	5
21. _____	N/A	1	2	3	4	5
22. _____	N/A	1	2	3	4	5

*This is a modified version of this measure intended for illustrative purposes only. The actual form of this measure is copyright protected and may vary in format. The actual form of the measure was utilized in data collection

APPENDIX G

PARENTING SENSE OF COMPETENCE SCALE (PSOC; GIBAUD-WALLSTON & WANDERSMAN, 1978; CITED IN HASSALL ET AL., 2005)*

Please rate the extent to which you agree or disagree with each of the following statements.

	Strongly Disagree	Somewhat Disagree	Disagree	Agree	Somewhat Agree	Strongly Agree
	1	2	3	4	5	6
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.	1	2	3	4	5	6
2. Even though being a parent could be rewarding, I am frustrated now while my child is at his / her present age.	1	2	3	4	5	6
3. I go to bed the same way I wake up in the morning, feeling I have not accomplished a whole lot.	1	2	3	4	5	6
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.	1	2	3	4	5	6
5. My parents were better prepared to be a good parent than I am.	1	2	3	4	5	6
6. I would make a fine model for a new parent to follow in order to learn what he/she would need to know in order to be a good parent.	1	2	3	4	5	6
7. Being a parent is manageable, and any problems are easily solved.	1	2	3	4	5	6
8. A difficult problem in being a parent is not knowing whether you're doing a good job or a bad one.	1	2	3	4	5	6
9. Sometimes I feel like I'm not getting anything done.	1	2	3	4	5	6
10. I meet by own personal expectations for expertise in caring for my child.	1	2	3	4	5	6

11. If anyone can find the answer to what is troubling my child, I am the one. 1 2 3 4 5 6
12. My talents and interests are in other areas, not being a parent. 1 2 3 4 5 6
13. Considering how long I've been a parent, I feel thoroughly familiar with this role. 1 2 3 4 5 6
14. If being a parent of a child were only more interesting, I would be motivated to do a better job as a parent. 1 2 3 4 5 6
15. I honestly believe I have all the skills necessary to be a good parent to my child. 1 2 3 4 5 6
16. Being a parent makes me tense and anxious. 1 2 3 4 5 6
17. Being a good parent is a reward in itself. 1 2 3 4 5 6

*This is a modified version of this measure intended for illustrative purposes only. The actual form of this measure is copyright protected and may vary in format. The actual form of the measure was utilized in data collection

APPENDIX H

BEHAVIOR ASSESSMENT SYSTEM FOR CHILDREN-SECOND EDITION PARENT RATING SCALE (BASC-2-PRS; REYNOLDS & KAMPHAUS, 2004)*

Parent Rating Scales— Preschool Computer-Entry Form		PRS-P Ages 2-5
<h1>BASC-2</h1>		
Behavior Assessment System for Children, Second Edition Cecil R. Reynolds, PhD, and Randy W. Kamphaus, PhD		
Child's Name _____ <small>First Middle Last</small>	Your Name _____ <small>First Middle Last</small>	
Date _____ Birth Date _____ <small>Month Day Year Month Day Year</small>	Sex: <input type="checkbox"/> Female <input type="checkbox"/> Male	
School/Center _____ Grade/Class _____	Relationship to Child: <input type="checkbox"/> Mother <input type="checkbox"/> Father	
Sex: <input type="checkbox"/> Female <input type="checkbox"/> Male Age _____	<input type="checkbox"/> Guardian <input type="checkbox"/> Other _____	
Other Data _____		

Instructions:
On the pages that follow are phrases that describe how children may act. Please read each phrase, and mark the response that describes how this child has behaved recently (in the last several months).
Circle **N** if the behavior **never** occurs.
Circle **S** if the behavior **sometimes** occurs.
Circle **O** if the behavior **often** occurs.
Circle **A** if the behavior **almost always** occurs.

Please mark every item. If you don't know or are unsure of your response to an item, give your best estimate.

How to Mark Your Responses
Be certain to **circle** completely the letter you choose, like this:
N (S) O A

If you wish to change a response, mark an X through it, and circle your new choice, like this:
N (X) (S) A

Before starting, be sure to complete the information in the boxes above these instructions.

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PRS-P Ages 2-5 1

Remember: N – Never S – Sometimes O – Often A – Almost always

- | | |
|--|---|
| 1. Shares toys or possessions with other children. N S O A | 41. Complains of being cold. N S O A |
| 2. Speaks in short phrases that are hard to understand. N S O A | 42. Is easily frustrated. N S O A |
| 3. Gets colds. N S O A | 43. Communicates clearly. N S O A |
| 4. Compliments others. N S O A | 44. Is sad. N S O A |
| 5. Acts without thinking. N S O A | 45. Interrupts others when they are speaking. <u>N S O A</u> |
| 6. Has a short attention span. N S O A | 46. Annoys others on purpose. N S O A |
| 7. Eats things that are not food. N S O A | 47. Offers help to other children. N S O A |
| 8. Seems unaware of others. N S O A | 48. Gets very upset when things are lost. N S O A |
| 9. Has trouble making new friends. N S O A | 49. Threatens to hurt others. N S O A |
| 10. Gets sick. N S O A | 50. Whines. N S O A |
| 11. Sleeps with parents. N S O A | 51. Worries about what other children think. N S O A |
| 12. Breaks other children's things. N S O A | 52. Cries easily. N S O A |
| 13. Misses school or daycare because of sickness. N S O A | 53. Has ear infections. N S O A |
| 14. Pouts. N S O A | 54. Makes friends easily. N S O A |
| 15. Provides own telephone number when asked. <u>N S O A</u> | 55. Cannot wait to take turn. N S O A |
| 16. Says, "Nobody likes me." N S O A | 56. Is too serious. N S O A |
| 17. Acts out of control. N S O A | 57. Adjusts well to new teachers or caregivers. N S O A |
| 18. Seeks revenge on others. N S O A | 58. Provides home address when asked. N S O A |
| 19. Congratulates others when good things happen to them. N S O A | 59. Needs help tying shoes. N S O A |
| 20. Worries about what parents think. N S O A | 60. Says, "please" and "thank you." <u>N S O A</u> |
| 21. Argues when denied own way. N S O A | 61. Needs too much supervision. N S O A |
| 22. Holds a grudge. N S O A | 62. Pays attention. N S O A |
| 23. Worries about parents. N S O A | 63. Worries about things that cannot be changed. N S O A |
| 24. Complains about being teased. N S O A | 64. Bangs head. N S O A |
| 25. Has headaches. N S O A | 65. Shows fear of strangers. N S O A |
| 26. Avoids other children. N S O A | 66. Makes frequent visits to the doctor. ... N S O A |
| 27. Is unable to slow down. N S O A | 67. Needs help putting on clothes. N S O A |
| 28. Is fearful. N S O A | 68. Hits other children. N S O A |
| 29. Recovers quickly after a setback. N S O A | 69. Tries new things. N S O A |
| 30. Provides full name when asked. <u>N S O A</u> | 70. Stares blankly. N S O A |
| 31. Vomits. N S O A | 71. Says all letters of the alphabet when asked. N S O A |
| 32. Begins conversations appropriately. N S O A | 72. Changes moods quickly. N S O A |
| 33. Has poor self-control. N S O A | 73. Acts strangely. N S O A |
| 34. Listens carefully. N S O A | 74. Bullies others. N S O A |
| 35. Says, "I'm afraid I will make a mistake." N S O A | 75. Encourages others to do their best. <u>N S O A</u> |
| 36. Babbles to self. N S O A | 76. Worries. N S O A |
| 37. Is shy with other children. N S O A | 77. Loses temper too easily. N S O A |
| 38. Complains about health. N S O A | 78. Is chosen last by other children for games. N S O A |
| 39. Decides what clothing to wear without help. N S O A | 79. Has a hearing problem. N S O A |
| 40. Calls other children names. N S O A | 80. Listens to directions. N S O A |

Remember: N – Never S – Sometimes O – Often A – Almost always

- | | |
|---|--|
| 81. Has fevers. N S O A | 109. Complains of pain. N S O A |
| 82. Is shy with adults. N S O A | 110. Clings to parent in strange surroundings. N S O A |
| 83. Is overly active. N S O A | 111. Interrupts parents when they are talking on the phone. N S O A |
| 84. Is cruel to animals. N S O A | 112. Has seizures. N S O A |
| 85. Is easily soothed when angry. N S O A | 113. Adjusts well to changes in family plans. N S O A |
| 86. Answers telephone properly. N S O A | 114. Is able to describe feelings accurately. N S O A |
| 87. Needs help using zippers. N S O A | 115. Has trouble fastening buttons on clothing. N S O A |
| 88. Politely asks for help. N S O A | 116. Volunteers to help with things. N S O A |
| 89. Fiddles with things while at meals. N S O A | 117. Throws tantrums. N S O A |
| 90. Is easily distracted. N S O A | 118. Is easily annoyed by others. N S O A |
| 91. Worries about making mistakes. N S O A | 119. Says, "I'm not very good at this." N S O A |
| 92. Acts confused. N S O A | 120. Chews clothing or blankets. N S O A |
| 93. Readily starts up conversations with new people. N S O A | 121. Wets bed. N S O A |
| 94. Has stomach problems. N S O A | 122. Has sore throats. N S O A |
| 95. Fails to wash hands when needed. N S O A | 123. Has trouble eating with a fork. N S O A |
| 96. Teases others. N S O A | 124. Disrupts the play of other children. N S O A |
| 97. Adjusts well to changes in routine. N S O A | 125. Adjusts easily to new surroundings. N S O A |
| 98. Shows feelings that do not fit the situation. N S O A | 126. Does strange things. N S O A |
| 99. Responds appropriately when asked a question. N S O A | 127. Sets fires. N S O A |
| 100. Is easily upset. N S O A | 128. Is negative about things. N S O A |
| 101. Says things that make no sense. N S O A | 129. Has toileting accidents. N S O A |
| 102. Needs help bathing self. N S O A | 130. Needs to be reminded to brush teeth. N S O A |
| 103. Uses appropriate table manners. N S O A | 131. Has eye problems. N S O A |
| 104. Tries to be perfect. N S O A | 132. Is nervous. N S O A |
| 105. Is clear when telling about personal experiences. N S O A | 133. Is unclear when presenting ideas. N S O A |
| 106. Refuses to join group activities. N S O A | 134. Quickly joins group activities. N S O A |
| 107. Falls down. N S O A | |
| 108. Pays attention when being spoken to. N S O A | |

*This Appendix only contains the BASC-2-PRS form for one age group (2-5 years old) that was utilized in this study. It was provided for illustrative purposes for the committee only and is copyright protected. Children within other age groups were assessed with a similar form that is appropriate for their relative age group.

APPENDIX I

GILLIAM AUTISM RATING SCALE- SECOND EDITION (GARS-3; GILLIAM, 2014)

Gilliam Autism Rating Scale—Third Edition

GARS-3

Summary/Response Form

James E. Gilliam

Section 1. Identifying Information

Individual's Name _____ School _____

Year Month Day

Date of GARS-3 Rating _____ Rater's Name _____

Date of Birth _____ Rater's Title _____

Age _____ Rater Has Known Individual for _____ (years/months)

Female Male Grade _____ Examiner's Name _____

Examiner's Title _____

Section 2. Subscale Performance

Subscales	Raw Scores	Percentile Ranks	Scaled Scores	SEMs
1. Restricted/Repetitive Behaviors (RB)	_____	_____	<input type="text"/>	1
2. Social Interaction (SI)	_____	_____	<input type="text"/>	1
3. Social Communication (SC)	_____	_____	<input type="text"/>	1
4. Emotional Responses (ER)	_____	_____	<input type="text"/>	1
5. Cognitive Style (CS)	_____	_____	<input type="text"/>	1
6. Maladaptive Speech (MS)	_____	_____	<input type="text"/>	1

Section 3. Composite Performance

Composites	Subscale Scaled Scores						Sum of Scaled Scores	%ile Ranks	Autism Index	SEMs	Probability of ASD	Severity Level
	RB	SI	SC	ER	CS	MS						
Autism Index (4 scores)	_____	_____	_____	_____	_____	_____	<input type="text"/>	_____	<input type="text"/>	4	_____	_____
Autism Index (6 scores)	_____	_____	_____	_____	_____	_____	<input type="text"/>	_____	<input type="text"/>	4	_____	_____

Section 4. Interpretation Guide

Autism Index	≤ 54	55–70	71–100	≥ 101
Probability of ASD	Unlikely	Probable	Very Likely	Very Likely
DSM-5 Severity Level for ASD		Level 1	Level 2	Level 3
Descriptor	Not ASD	Minimal Support Required	Requiring Substantial Support	Requiring Very Substantial Support

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3 4 5 6 7 8 9 10 22 21 20 19 18 17 16 15 14

Additional copies of this form (#13783) may be purchased from PRO-ED, 8700 Shoal Creek Blvd., Austin, TX 78757-6897 800/897-3202, Fax 800/397-7633, www.proedinc.com

Section 5: Ratings

Directions: On a scale of 0 to 3, rate the following items in terms of how adequately the item describes the individual's behavior. Circle the number that best describes your observations of the person's typical behavior under ordinary circumstances (i.e., in most places, with people he or she is familiar with, and in usual daily activities). Remember to rate every item. If you are uncertain about how to rate an item, delay the rating and observe the person for a 6-hour period to determine your rating.

- 0 Not at all like the individual
- 1 Not much like the individual
- 2 Somewhat like the individual
- 3 Very much like the individual

PLEASE RATE EVERY ITEM

Restricted/Repetitive Behaviors

1.	If left alone, the majority of the individual's time will be spent in repetitive or stereotyped behaviors.	0	1	2	3
2.	Is preoccupied with specific stimuli that are abnormal in intensity.	0	1	2	3
3.	Stares at hands, objects, or items in the environment for at least 5 seconds.	0	1	2	3
4.	Flicks fingers rapidly in front of eyes for periods of 5 seconds or more.	0	1	2	3
5.	Makes rapid lunging, darting movements when moving from place to place.	0	1	2	3
6.	Flaps hands or fingers in front of face or at sides.	0	1	2	3
7.	Makes high-pitched sounds (e.g., eee-eee-eee-eee) or other vocalizations for self-stimulation.	0	1	2	3
8.	Uses toys or objects inappropriately (e.g., spins cars, takes action toys apart).	0	1	2	3
9.	Does certain things repetitively, ritualistically.	0	1	2	3
10.	Engages in stereotyped behaviors when playing with toys or objects.	0	1	2	3
11.	Repeats unintelligible sounds (babbling) over and over.	0	1	2	3
12.	Shows unusual interest in sensory aspects of play materials, body parts, or objects.	0	1	2	3
13.	Displays ritualistic or compulsive behaviors.	0	1	2	3

Subtotals

+ + +

Restricted/Repetitive Behaviors Raw Score

Social Interaction

14.	Does not initiate conversations with peers or others.	0	1	2	3
15.	Pays little or no attention to what peers are doing.	0	1	2	3
16.	Fails to imitate other people in games or learning activities.	0	1	2	3
17.	Doesn't follow other's gestures (cues) to look at something (e.g., when other person nods head, points, or uses other body language cues).	0	1	2	3
18.	Seems indifferent to other person's attention (doesn't try to get, maintain, or direct the other person's attention).	0	1	2	3
19.	Shows minimal expressed pleasure when interacting with others.	0	1	2	3
20.	Displays little or no excitement in showing toys or objects to others.	0	1	2	3
21.	Seems uninterested in pointing out things in the environment to others.	0	1	2	3
22.	Seems unwilling or reluctant to get others to interact with him or her.	0	1	2	3
23.	Shows minimal or no response when others attempt to interact with him or her.	0	1	2	3
24.	Displays little or no reciprocal social communication (e.g., doesn't voluntarily say "bye-bye" in response to another person saying "bye-bye" to him or her).	0	1	2	3
25.	Doesn't try to make friends with other people.	0	1	2	3
26.	Fails to engage in creative, imaginative play.	0	1	2	3
27.	Shows little or no interest in other people.	0	1	2	3

Subtotals

+ + +

Social Interaction Raw Score

Social Communication

28.	Responds inappropriately to humorous stimuli (e.g., doesn't laugh at jokes, cartoons, funny stories).	0	1	2	3
29.	Has difficulty understanding jokes.	0	1	2	3
30.	Has difficulty understanding slang expressions.	0	1	2	3
31.	Has difficulty identifying when someone is teasing.	0	1	2	3
32.	Has difficulty understanding when he or she is being ridiculed.	0	1	2	3
33.	Has difficulty understanding what causes people to dislike him or her.	0	1	2	3
34.	Fails to predict probable consequences in social events.	0	1	2	3
35.	Doesn't seem to understand that people have thoughts and feelings different from his or hers.	0	1	2	3
36.	Doesn't seem to understand that the other person doesn't know something.	0	1	2	3
Subtotals			+	+	+
Social Communication Raw Score					

Emotional Responses

37.	Needs an excessive amount of reassurance if things are changed or go wrong.	0	1	2	3
38.	Becomes frustrated quickly when he or she cannot do something.	0	1	2	3
39.	Temper tantrums when frustrated.	0	1	2	3
40.	Becomes upset when routines are changed.	0	1	2	3
41.	Responds negatively when given commands, requests, or directions.	0	1	2	3
42.	Has extreme reactions (e.g., cries, screams, tantrums) in response to loud, unexpected noise.	0	1	2	3
43.	Temper tantrums when doesn't get his or her way.	0	1	2	3
44.	Temper tantrums when told to stop doing something he or she enjoys doing.	0	1	2	3
Subtotals			+	+	+
Emotional Responses Raw Score					

Is the individual mute? Yes No If your answer is yes, do not complete the next two subscales.

Cognitive Style

45.	Uses exceptionally precise speech.	0	1	2	3
46.	Attaches very concrete meanings to words.	0	1	2	3
47.	Talks about a single subject excessively.	0	1	2	3
48.	Displays superior knowledge or skill in specific subjects.	0	1	2	3
49.	Displays excellent memory.	0	1	2	3
50.	Shows an intense, obsessive interest in specific intellectual subjects.	0	1	2	3
51.	Makes naive remarks (unaware of reaction produced in others).	0	1	2	3
Subtotals			+	+	+
Cognitive Style Raw Score					

Maladaptive Speech

52.	Repeats (echoes) words or phrases verbally or with signs.	0	1	2	3
53.	Repeats words out of context (repeats words or phrases heard at an earlier time).	0	1	2	3
54.	Speaks (or signs) with flat tone, affect.	0	1	2	3
55.	Uses "yes" and "no" inappropriately. Says "yes" when asked if he or she wants an aversive stimulus or says "no" when asked if he or she wants a favorite toy or treat.	0	1	2	3
56.	Uses "he" or "she" instead of "I" when referring to self.	0	1	2	3
57.	Speech is abnormal in tone, volume, or rate.	0	1	2	3
58.	Utters idiosyncratic words or phrases that have no meaning to others.	0	1	2	3
Subtotals			+	+	+
Maladaptive Speech Raw Score					

3

*This is a scanned version of a measure intended for illustrative purposes only. The actual form of this measure is copyright protected. The actual form of the measure was utilized in data collection

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