

AN INVESTIGATION OF PARENT-CHILD  
RELATIONSHIPS  
WITHIN FAMILIES IMPACTED  
BY AUTISM SPECTRUM DISORDERS

By

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AN INVESTIGATION OF PARENT-CHILD RELATIONSHIPS  
WITHIN FAMILIES IMPACTED  
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Title of Study: AN INVESTIGATION OF PARENT-CHILD RELATIONSHIP WITHIN FAMILIES IMPACTED BY AUTISM SPECTRUM DISORDERS

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Abstract: **Objective:** To expand the understanding of theoretical models of family dynamics involving parent stress, parenting behavior, child disruptive behavior problems, and autism symptom severity. The study aimed to replicate previous findings within the literature and expand existing models involving parent and child characteristics. **Method:** One-hundred and thirty parents of children between the ages of 3 and 11 years with an Autism Spectrum Disorder were recruited through the Interactive Autism Network (IAN) Research Center at the Kennedy Krieger Institute and Johns Hopkins Medicine – Baltimore, sponsored by the Autism Speaks Foundation. Parents completed the Gilliam Autism Rating Scale-2, Parent Stress Index, Parent Sense of Competence, Parenting Scale, Eyberg Child Behavior Inventory, and a demographic questionnaire. **Results:** Parents reported high levels of parent stress and child disruptive behavior problems. Associations demonstrated concordance with previously proposed theoretical models. Bootstrapping analyses demonstrated parental self-efficacy and parenting strategies mediated the link between parent stress and child behavior problems while controlling for autism symptom severity. **Conclusion:** Comprehensive treatments for children with ASD should take into account parents' stress, wellbeing, and specific challenges that exist in the parenting role when raising a child with an Autism Spectrum Disorder. More research is needed to identify and understand mediating and moderating variables involved within families receiving treatment for Autism Spectrum Disorders.

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## CHAPTER I

### INTRODUCTION

Research suggests that parents of children affected by Autism Spectrum Disorders (ASDs) have elevated levels of parent stress (Blacher & McIntyre, 2006). Additionally, children of these parents are likely to experience elevated levels of child disruptive behavior problems (Tonge & Einfeld, 2003). Proposed theoretical models (i.e., Deater-Deckard, 1998; Hastings, 2002) have suggested that there may be associations not only between parent stress and child disruptive behavior, but also between parent behaviors (e.g., limit-setting and efficacy) as well as child ASD characteristics (e.g., symptom severity). However, limited literature within the ASD population has tested the associations between these variables. Determining best practices for parent-training for parents of children with ASD will remain difficult without establishing and evaluating the effects of parenting stress, parent behaviors, and child disruptive behavior problems. Hence, the current study seeks to evaluate possible significant correlates of child disruptive behavior problems such as parent stress in the parenting role, the parent behavior of limit setting, and parental self-efficacy.

Futhermore, Osborne and colleagues (2008a) found that the parent behavior of limit-setting mediated the relationship between parenting stress and subsequent childhood

behavior problems such that parenting behavior significantly predicted the development of childhood behavior problems above that of parenting stress. This finding suggests that there may be certain parenting behaviors that may elicit more frequent and perhaps more severe child behavior problems. To my knowledge, no other study has been conducted to replicate this finding.

The purpose of this paper is to review existing research addressing parent stress, parenting strategies, child disruptive behavior problems, and child severity of ASD symptoms. A review of research examining parent training for children is also included. Next, the current investigation is discussed. The purpose of the current study was to expand our understanding of the associations between parent stress, parenting behavior, and child disruptive behavior problems within a sample from the United States that is younger and more representative of the range of functioning within the ASDs. Further, specific influence of ASD severity was controlled to more closely examine the individual association between each construct. Implications for parent training programs for families affected by ASD and comorbid disruptive behavior problems are discussed.



## CHAPTER II

### REVIEW OF THE LITERATURE

Families affected by Autism Spectrum Disorders (ASDs) are growing in number (Center for Disease Control and Prevention, CDC, 2012), and the demands of parenting a child with special needs are numerous. While the research community agrees that parents can be taught skills to help increase skill acquisition in their children (see Matson, Mahan, & Matson, 2009 for review), there does not appear to be a unified method of parent training for this unique population (Brookman-Frazee, Stahmer, Baker-Ericzen, & Tsai, 2006). Moreover, the amount of parental involvement tends to vary widely by family and intervention services, with some parents spending several hours a week employing specific direct teaching trials, others incorporating naturalistic (i.e., incidental) learning opportunities, and others working with professional agencies (e.g., school department, health insurance) to ensure adequate treatment of their children (Goin-Kochel, Myers, & Mackintosh, 2009). In addition, many parents take part in a combination of the three roles. Despite the National Research Council call for collaboration between families and providers in the treatment of children with ASD (NRC, 2001), limited research on the contribution and impact of parental involvement exists.

Child-rearing adds a number of responsibilities and stressors to most parents (Crnic & Greenberg, 1990), but parents of children with ASD appear to be at heightened risk for elevations in parenting stress compared to those of typically-developing children and children with other intellectual and developmental disabilities (Blacher & McIntyre, 2006; Dunn, et al., 2001; Eisenhower, Baker, & Blacher, 2005; Gupta, 2007;). Since approximately two-thirds of parents of children with ASD report experiencing clinically significant levels of child-related stress (Tomanik, Harris, & Hawkins, 2004), a number of researchers have examined areas of potential stressors. Specifically, Hastings and Johnson (2001) reported that parenting stress in parents of children with ASD was associated with increased child symptomatology and severity of impairment. Further, children who score high in symptom severity and low in adaptive behavior skills prior to intervention are less likely to have as many gains as children who score low in symptom severity and high in adaptive behavior skills (Ben Itzhak & Zachor, 2011; Perry, Cummings, Geier, Freeman, Hughes, & Managhan et al., 2011). However, the level of parenting stress within an ASD population has been shown to have an effect above and beyond initial child characteristics. For instance, Robbins, Dunlap, and Plienis (1991) were the first to empirically document that levels of parenting stress were inversely related to child outcome within an ASD population. More recently, researchers have demonstrated that initial levels of parenting stress had detrimental effects on acquiring educational and adaptive functioning skills (Osborne, McHugh, Saunders, & Reed, 2008b). Osborne and colleagues examined families after 9 to 10 months of a combination of ongoing time-intensive programs (>15.6 hours/week) for children with ASD aged 2.6 to 4.0 years. They found that parents' initial levels of stress had

detrimental effects on child outcome in the areas of educational and adaptive functioning skills.

Parents of a child with ASD take care of typical parenting activities along with other obligations to help their children's development. As treatment regimens can differ significantly based on geographic location, family beliefs, and factors such as funding, parents of children with ASD have typically tried between 7 and 9 different types of therapy, and most families currently take part in 4 to 6 therapies (Goin-Kochel, Myers, & Mackintosh, 2007). However, despite the empirical evidence for treatments grounded in applied behavior analysis to reduce ASD symptomatology, there are other service options for parents of children with ASD that do not have empirical support (e.g., special diets, alternative medicine; Schechtman, 2007). The conflicting message of therapeutic treatments can be especially challenging for parents when seeking help for their children, as they are often put on early intervention waitlists for empirically-based services. Parents of children with ASD appear to be most susceptible to stress in the parenting role; however, their level of stress related to general life stressors is no higher than that of the general populations (Osborne & Reed, 2008).

Children with ASD also present other unique challenges. For example, Brereton and colleagues compared 367 individuals with ASD and 550 individuals with other intellectual disabilities for emotional and behavioral problems (Brereton, Tonge, & Einfeld, 2006). They found that children with ASD were more prone to meet criteria for an additional psychiatric disorder, as well as have higher levels of disruptive behavior, anxiety symptoms, hyperactivity, and depression compared to the other groups of children. Recent research suggests that approximately 70% of individuals with ASD

present with at least one co-occurring psychiatric disorder (Leyfer et al., 2006; Simonoff et al., 2008). Consequently, these additional behavioral problems, such as overreactivity, impulsiveness, tantrums, aggression, and self-injury, along with the core deficits of ASD, cause interference in daily living skills and parent-child interactions (Gadow, et al., 2005; Lecavalier, 2006; Lecavalier, Leone, & Wiltz, 2006; Tonge & Einfeld, 2003).

Interestingly, parents of four- to seven-year-olds report that noncompliance, oppositional behavior, and aggression are the most prevalent behavioral problems in children with ASD (Baker & Feinfield, 2003). Due to the significantly high rates and persistence of behavioral problems in children and adolescents with developmental delays (Nicholas et al., 2008), more research is warranted to understand how parenting skills and parental stress in the parenting role may affect childhood behavior problems.

Given that parenting stress in parents of children with ASD is linked in some way with child disruptive behavior problems, researchers have begun to examine the directionality of the association and analyze which variables may influence parenting stress. A number of researchers focusing on non-ASD populations have shown a direct link between parenting stress and child behavior problems (Anthony et al., 2005; Blader, 2006), however few studies have examined similar questions within an ASD population. Theoretical models (i.e., Deater-Deckard, 1998; Hastings, 2002) have suggested associations between parent stress, child disruptive behavior, parent behaviors (e.g., limit-setting and efficacy), and child ASD characteristics (e.g., symptom severity). However, limited literature within the ASD population has tested the associations between these variables. For instance, Lecavalier, et al. (2006) reported a bi-directional link between parenting stress and child behavior problems in 293 children and

adolescents with ASD across a 1-year period. The authors found that parent stress and behavior problems exacerbated each other during that time period. Moreover, Osborne and Reed (2010) found a bi-directional link between parenting stress and perceived parenting behaviors among 138 families with a child with ASD. Finally, Osborne and colleagues (2008a) found that the parent behavior of limit-setting mediated the relationship between parenting stress and subsequent child behavior problems. Their finding suggests that there may be certain parenting behaviors that may elicit more frequent and perhaps more severe child behavior problems.

Traditionally, the role of parent training interventions has differed between parents of children with ASD and parents of children with disruptive behavior problems. Although both traditions are based on operant conditioning procedures, historically parents of children with ASD have been included in training to learn methods to teach their children specific skills (e.g., functional play, communication, joint attention); parents of children with disruptive behaviors, however, have historically been included to improve parenting practices to increase child compliance and reduce disruptive problem behaviors (see Brookman-Frazee, Vismara, Drahotka, Stahmer, & Openden, 2009; Brookman-Frazee et al., 2006, for review). For this reason, few studies within the ASD literature have looked at parenting behavior, parent stress, and child behavior problems simultaneously. Meanwhile, determining best practices for parent training programs for those impacted by ASD will remain difficult without establishing and evaluating the effects of parent stress, parent behaviors, and child disruptive behavior problems.

Parenting stress has detrimental effects on child gains and the parent-child relationship within the ASD population. Possible causal influences should be established

within the existing theoretical models to further understand methods that can help these families. To date, only one study has simultaneously demonstrated the directional relationship between parent stress, parenting behavior, and child disruptive behavior problems. The study took place outside the United States with children in late childhood through adolescence who were slightly higher than normal functioning for an ASD population (i.e., Osborne, McHugh, Saunders, & Reed, 2008a).

The current study sought to expand our understanding of the associations between parent stress, parenting behavior, and child disruptive behavior problems within a sample from the United States that is younger and more representative of the ASD child population. Further, specific influence of ASD severity was controlled to more closely examine the individual association between each construct. Implications for parent training programs for families affected by ASD and comorbid disruptive behavior problems are discussed.

## **Hypotheses**

It was hypothesized that parents of children with ASD would exhibit elevated levels of parenting stress. Further, since children with ASD often exhibit challenging or undesirable behaviors such as temper tantrums, noncompliance, self-injury, and aggression (Gadow, et al., 2005; Lecavalier, 2006), it was hypothesized that children with ASD would exhibit elevated levels of child disruptive behavior problems. In addition, it was hypothesized that there would be a significant positive association between ASD symptom severity and parenting stress. In accordance with Hasting's (2002) theoretical model, parental self-efficacy is associated with parent stress. Therefore, it was

hypothesized that there would be a significant negative association between parental self-efficacy and parenting stress. Furthermore, it was hypothesized that there would be a significant positive association between parenting stress and child disruptive behavior problems.

Teaching behavioral skills to parents of children with ASD focuses predominately on teaching the parent to deliver learning-based opportunities to his/her child to reduce ASD symptoms, and not on behavioral management techniques for disruptive behavior. Following Osborne et al.'s (2008a) finding that certain parenting behaviors (e.g., giving in) are linked to child behavior problems, it was hypothesized that there would be a significant positive association between parenting strategies and child disruptive behavior problems. Specifically, it was also hypothesized that parenting behaviors that involve giving in to child misbehavior and setting poor limits will be significantly associated with level of child disruptive behavior problems. Given the previous research that has linked child disruptive behavior problems to both parent behavior and parent stress, it is hypothesized that there would also be a significant positive association between parent strategies and parent stress.

Finally, a mediator analysis was conducted to examine parent stress, parental self-efficacy, and parenting strategies on child disruptive behavior problems. The analyses specifically targeted two research questions: 1. Is the link between parent stress and child disruptive behavior problems mediated by discipline strategies; and 2. Is the link between parent stress and child disruptive behavior problems mediated by parental self-efficacy?

## CHAPTER III

### METHODOLOGY

#### **Participants**

*Parent Characteristics.* A survey of 130 parents of children between the ages of 3 and 11 years were recruited through the Interactive Autism Network (IAN) Research Center at the Kennedy Krieger Institute and Johns Hopkins Medicine – Baltimore, sponsored by the Autism Speaks Foundation. Specialists in the field of ASD have previously diagnosed children participating in IAN research. These independent diagnoses were supported in the present study by the Gilliam Autism Rating Scale – Second Edition (GARS-2; Gilliam, 1995). Parents from 36 states in the United States participated in the study. The data were collected from April to July, 2012. The parents ranged in age from 24 to 58 years ( $M = 39.81$ ,  $SD = 6.56$ ). Of the participants, 115 (88.5%) were biological mothers, 11 (8.5%) were biological fathers, and 4 (3%) were adopted mothers. Although participants were recruited from many states representing a variety of services received, there was limited heterogeneity in terms of the ethnicity of the parents. All of the parents reported their ethnicity: 118 (90.8%) were Caucasians, 4 (3.1%) were African-Americans, 4 (3.1%) were Hispanics, 2 (1.5%) were Asian/Pacific Islander and 2 (1.5%) were multiracial. Each participant included their marital status: 9



(6.9%) were never married, 101 (77.7%) were married, 16 (12.3%) were divorced or separated, and 4 (3.1%) were living with a partner. All reported their highest degree of education: 7 (5.4%) received a High School diploma or GED, 40 (30.8%) received some college training, 49 (37.7%) received a bachelor's degree, and 34 (26.1%) received an advanced degree.

Only 123 parents reported annual household income, which ranged from less than \$15,000 to more than \$150,000. Nineteen families (15.4%) reported income of less than or equal to \$30,000; 11 (8.9%) reported income of \$30,001 to \$45,000; 36 (29.3%) reported income of \$45,001 to \$80,000; 37 (30%) reported income of \$80,001 to \$125,000; and 20 (16.3%) reported income greater than \$125,001.

*Child Characteristics.* The children ranged in age from 3 to 11 years ( $M = 8.57$ ,  $SD = 2.36$ ). All parents reported their child's current diagnosis. All the children had been diagnosed as being on the autism spectrum: 74 (56.9%) with Autistic disorder; 32 (24.6%) with Asperger's disorder; 23 (17.7%) with Pervasive Developmental Disorder, Not Otherwise Specified (PDD-NOS); and 1 (.8%) diagnosed with ASD with recent recovery noted. Of the 130 children, 116 (89.2%) were male and 14 (10.8%) were female. It should be noted that 40 (31%) parents reported at least one other co-morbid psychiatric diagnosis for their child. Specifically, 29 (22%) reported a secondary disruptive behavior disorder and 11 (9%) reported a secondary anxiety disorder.

## **Materials**

### *Demographic and Autism Services Experiences Survey*

Parents completed a demographic/background form designed specifically for the study. The information was used to assess demographic and previous treatment information. The form included the participant's age, child's age, child's diagnoses, relationship to the child (i.e., biological parent, step-parent, or adopted parent), race/ethnicity, yearly household income, years of education completed, marital status, and additional information for a separate project.

### *Parent Stress Index – Short Form (PSI-SF; Abidin, 1995)*

The PSI-SF is a condensed version of the Parent Stress Index (Abidin, 1995) that includes 36-items from the original 120-item parent self-report questionnaire. The PSI-SF measures stress directly associated within the parenting role. Each item is scored on a five-point scale ranging from strongly agrees to strongly disagrees. The PSI-SF yields a Total Stress score that is the combination of the following subscales: 1) Parental Distress which assesses the distress a parent is experiencing in his or her role as a function of personal factors that are directly related to parenting, 2) Parent-Child Dysfunctional Interaction which assesses parental perception that a child does not meet the parental expectations and the parent does not feel reinforced by child, and 3) Difficult Child which assesses behavioral characteristics of a child that make them either easy or difficult to manage. The PSI-SF also includes a validity scale, defensive responding. Parents who obtain a raw score of 10 or below may indicate a strong bias to present with an underrepresentation of stress in the parenting role. Parents who obtain a Total Stress raw

score above 90 are considered to be experiencing clinically significant parenting stress. The PSI-SF is a widely-used measure and several studies identify strong psychometric properties (see Abidin, 1995 for review). For instance, the PSI-SF has demonstrated concurrent validity ( $r = .94$ ) with the long form version (Abidin). Additionally, factor analysis revealed two separate and internally consistent subscales (Parental Distress and Parent-Child Dysfunctional Interaction; Haskett, Ahern, Ward, & Allaire, 2006). Lastly, studies of PSI-SF have demonstrated adequate reliability and validity within a variety of populations (minorities, single parents) supporting its use with multiple populations (Bhavnagri, 1999; Reitman, Currier, & Stickle, 2002) and have been used extensively within the ASD literature (Dunn, Burbine, Bowers, & Tantleff-Dunn, 2001; Robbins, Dunlap, & Plienis, 1991; Quinn, Carr, Carroll, & O'Sullivan, 2007). The Total Stress scores were used as a comprehensive assessment of stress in all areas of the parenting role. The Parental Distress subscale scores were used as a measure of parent stress that is not confounded by measures of child characteristics. For the current study, the Cronbach's alphas for Total Stress, Parental Distress, Parent-Child Dysfunctional Interaction, and Difficult Child were .91, .85, .84, and .87, respectively.

*Eyberg Child Behavior Inventory* (ECBI; Eyberg & Pincus, 1999; Eyberg & Ross, 1978)

The ECBI is a parent-report assessment that examines disruptive behaviors of children between the ages of 2 and 16 years. The measure consists of 36 specific problem behaviors of children with externalizing behavior disorders. Each item consists of two parent ratings. First, parents identify how often the child engages in the behavior on a scale of 1(*never*) to 7(*always*), and these items are summed for the Intensity score. Second, parents identify whether they consider the behavior to be a problem (i.e., *yes* or

no), and these items are scored for a Problem Score. The clinical cutoff scores are 131 for the Intensity Score and 15 for the Problem Score (Eyberg & Pincus, 1999). The ECBI has high internal consistency for both the Intensity ( $\alpha = .95$ ) and Problem ( $\alpha = .94$ ) scores, good test-retest reliability ( $r = .86$ ) and reliably discriminates between problem and nonproblem children (Robinson, Eyberg, & Ross, 1980). Several studies have shown the ECBI to be a reliable and valid measure in assessing problem behavior, and as being sensitive to behavior change in response to treatment (e.g. Boggs, Eyberg, & Reynolds, 1990; Eyberg & Ross). Both scores (Intensity, Problem) were used as a comprehensive measure of child behaviors and parental tolerance. For the current study, the Cronbach's alpha was .93 for the Intensity Scale and .90 for the Problem Score.

*Gilliam Autism Rating Scale: Second Edition (GARS-2; Gilliam, 1995)*

The GARS-2 is a 42-item parent-report questionnaire designed to identify and estimate the severity of symptoms of ASDs. It has been widely used in schools and research for children between the ages of 3 and 22 (Gilliam, 1995; South et al., 2002). The GARS-2 is composed of the following three subscales: Stereotyped Behaviors (e.g., flaps hands, rocks back and forth, spins items not designed for spinning); Communication (e.g., repeats words, uses pronouns inappropriately); and Social Interaction (e.g., avoids eye contact, becomes upset when routines are changed). The three subscales contain 14 items each that are based on the diagnostic criteria in the DSM-IV-TR (APA, 2000). This test yields 3 subtest standard scores and an overall Autism Index (i.e., probability of the child having an ASD). Respondents take into account a typical 6-hour period when answering items. Items are rated on a four-point scale with 0 indicating *never observed* and 3 indicating *frequently observed or happens 5-6 times in the last 6 hours*. Gilliam

(1995) reported excellent psychometric properties. Studies reveal internal consistency of .84 for Stereotyped Behaviors, .86 for Communication, .88 for Social Interaction, and .94 for the Autism Index. For the current study, the Cronbach's alphas were .82, .87, .82, and .92 respectively.

*Parenting Sense of Competence (PSOC; Gibaud-Wallston & Wandersman, 1978)*

Mash and Johnston's (1989) version of Gibaud-Wallston and Wandersman's (1978) Parenting Sense of Competence Scale (PSOC) is a 16-item self-report questionnaire designed to measure parents' satisfaction and efficacy in their parenting role. The Total PSOC score ranges from 17-102. High scores represent high degrees of satisfaction and efficacy. The Satisfaction subscale reflects parenting frustration, anxiety, and motivation, while Efficacy assesses capability, problem-solving ability, and competence within the parenting role. Adequate psychometric properties have been reported by the original authors (Gibaud-Wallston & Wandersman, 1978) and more recently by Johnston and Mash (1989). Johnston and Mash (1989) reported internal consistency alpha coefficients of .79 for the Total score, .75 for the Satisfaction factor, and .76 for the Efficacy factor. For the current study, the Cronbach's alphas for the measure were .84, .75, and .81 respectively. The Total PSOC score was used in this study to measure parents' overall motivation and capability to handle parenting responsibility. The PSOC Efficacy subscale was used in this study to measure parent's perception of their competence and problem-solving ability within parenting.

*Parenting Scale* (PS; Arnold, O’Leary, Wolfe, & Acker, 1993)

The PS assesses dysfunctional parental discipline techniques of parents with children between 18 months and 5 years. The scale is 30 items and uses a seven-point rating scale. It includes three factors: Laxness, a parenting technique associated with permissive discipline (e.g., giving in to a tantrum, failing to enforce rules); Overreactivity (e.g., displays of parental anger and irritability); and Verbosity (i.e., an over reliance on talking even when futile). Lower scores indicate more effective strategies. Arnold and colleagues (1993) reported test-retest reliability coefficient’s as .83 for Laxness, .82 for Overreactivity, .79 for Verbosity, and .84 for the Total Score. Although the original standardization data were developed for parents of children under the age of 6, there is some evidence that the measure is useful for families of children 6 years of age and older (Irvine, Biglan, Smokowski, & Ary, 1999). For instance, in a sample of children with ADHD and without ADHD between the ages of 5 and 12 Cronbach’s alphas for mothers were .87, .85, and .84 for the Total Score, Laxness subscale, and Overreactivity subscales, respectively (Harvey, Danforth, Ulaszek, & Eberhardt, 2001). The current study yielded Cronbach’s alphas of .64 for Verbosity, .84 for Overreactivity, .81 for Laxness, and .86 for the Total score. The Total score as well as the Overreactivity and Laxness factor scores were used as measures of parenting practices.

## **Procedures**

The IAN list serve was the primary means of recruitment for the present study. The IAN, a project of Kennedy Krieger Institute sponsored by Autism Speaks and the Simons Foundation, is designed to accelerate the pace of ASD research by linking families of children with ASD with researchers. IAN sent a mass email about the study

to families who previously registered with IAN and volunteered to participate in research. The email included a link and a password to a secure website that interested participants followed to access the study materials. To help ensure participation, IAN sent reminder mass emails approximately 2-weeks and 3-weeks after the initial email. Following participation of the online portion, parents were sent a packet via mail with provided information from the Personal Information Sheet. The packet included the GARS-2, a ticket for a raffle for \$150, a \$10 gift card to a national chain store, and a postage-paid return envelope.

Survey Gizmo was used for the online questionnaires. All of the information collected was stored in a secure database that was transferred to a secondary secure database on the Oklahoma State University server. After completing the informed consent and the demographic question information, parents were directed to continue with all the measures. Each participant was assigned a participation code. For each measure, the codes were used to identify participants instead of using their names. For the purposes of data analysis, the codes were also used instead of identifying information.

*Outliers and Excluded Data.* Each of the independent and dependent variables were screened for univariate outliers, defined as scores of greater than three standard deviations above or below the group mean. This procedure revealed no outliers. Two participants had two or more items missing within the same subscale on the PSI and their PSI scores were excluded from analyses. Two participants missed four or more items on the ECBI Intensity scale and therefore were considered invalid per the manual. Their Intensity scores were excluded from analyses. Three participants missed four or more items on the ECBI Problem scale and therefore were considered invalid per the manual.

Their Problem Scale scores were excluded from analyses. Additionally, 17 participants did not return the GARS-2 in the mailing portion of the study, therefore the participants' GARS-2 scores could not be analyzed and those participants were dropped from analyses that included the GARS-2 scores.



## CHAPTER IV

### RESULTS

#### **Levels of Symptomatology**

Descriptive data for the sample on measures with clinical cutoffs are presented in Table 1. For parent stress, PSI Total scores ranged from 43 to 125, with a mean score of 83.98 and a standard deviation of 18.70. Thirty-seven percent of parents scored in the clinical range on this measure (i.e., a score > 90). The PSI Parent Distress (PD) subscale scores ranged from 12 to 54, with a mean score of 33.35 and a standard deviation of 8.99. For child problem behaviors, ECBI Intensity scores ranged from 43 to 227, with a mean score of 128.64 and a standard deviation of 37.01. Forty-one percent of children were rated in the clinical range for the frequency of problem behaviors (i.e., a score > 131). ECBI Problem scores ranged from 0 to 36, with a mean score of 12.57 and a standard deviation of 7.95. Thirty-six percent of children were rated in the clinical range for their parents' perception of their behavior as problematic (i.e., a score > 15). For child autism symptom severity, GARS-2 Autism Index scores ranged from 53 to 132, with a mean score of 96.57 and a standard deviation of 18.30. Ninety-one percent scored in the possible to very likely range to have an ASD (i.e., a score > 69), while fewer than nine percent scored in the unlikely range. Analyses included all participants even though

some did not score above the range for possible autism on the GARS-2 Autism Index. No outliers within the data were found as noted above, and it is possible that as children receive intervention, the impact of ASD symptoms can decrease below the clinical threshold for diagnosis on some measurements.

On the final two measures, descriptive data are presented. However, no clinical scales are derived for these measures. For parental competence in the role as a parent, PSOC Total scores ranged from 36 to 95, with a mean score of 68.30 and a standard deviation of 11.78. PSOC Satisfaction scores ranged from 13 to 54, with a mean score of 37.51 and a standard deviation of 7.77. PSOC Efficacy scores ranged from 13 to 42, with a mean score of 30.79 and a standard deviation of 5.68. Finally, for parental discipline techniques, Parenting Scale (PS) Total scores ranged from 1.07 to 4.77, with a mean score of 2.72 and a standard deviation of .66. PS Laxness scores ranged from 1.00 to 4.64, with a mean score of 2.49 and a standard deviation of .80. PS Overreactivity scores ranged from 1.00 to 6.00, with a mean score of 2.46 and a standard deviation of .88.

It was hypothesized that parents of children with ASD would exhibit elevated levels of parenting stress compared to the standardization sample of the PSI-SF (Abidin, 1995). The participants were categorized by the clinical cutoff (i.e., 90<sup>th</sup> percentile) into either an elevated stress group or a non-elevated stress group. In order to determine whether the participants obtained elevated levels of parent stress compared to the standardization sample, frequencies of the observed scores in the elevated and non-

elevated groups were compared to the expected scores based on the standardization sample. From the standardization sample, it was expected that 10% of parents would score in the elevated range and 90% of parents would score in the non-elevated range. A chi-square test of homogeneity was performed. The association between these variables was significant with a large effect size,  $\chi^2(2, N = 127) = 102.93, p < 0.001, \Phi = .90$ . This supports the hypothesis that parents of children with ASD are more likely to exhibit elevated levels of parents stress compared to parents of non-ASD children.

It was hypothesized that children with ASD would exhibit elevated levels of child disruptive behavior problems. In order to test this hypothesis a chi-square test of homogeneity was conducted by categorizing children on ECBI Intensity scores into either an elevated problem group or a non-elevated problem group. An ECBI Intensity score at or above 131 meets the clinical cutoff. Thus a raw score of 131 served to classify the two groups as elevated and non-elevated. Specifically, based on the standardization sample, it was expected that 84.1% of parent rated child disruptive problem behavior scores on the ECBI to be below the clinical cutoff (i.e. in the non-elevated problem group). Therefore, observed frequencies were compared to expected frequencies using the chi-square test of homogeneity. The association between these variables was significant with a large effect size,  $\chi^2(2, N = 128) = 70.14, p < 0.001, \Phi = .74$ . This supports the hypothesis that children with ASD are more likely to exhibit elevated levels of disruptive problem behaviors compared to children without ASD.

## **Associations Between Parenting and Child Variables**

A series of replications were conducted to duplicate previous associations within the literature and these analyses are summarized in Table 2. First, it was hypothesized that there would be a significant positive association between ASD symptom severity and parent stress. A Pearson product-moment correlation revealed a significant positive correlation between the Autism Index scores on the GARS-2 and the Total Stress scores on the PSI-SF,  $r(113) = .516, p < .001$ . This supports previous findings that higher ASD symptom severity is associated with higher levels of parent stress. Second, it was hypothesized that there would be a significant negative association between parental self-efficacy and parenting stress. To test this hypothesis, PSOC Efficacy subscale scores were correlated with the Total Stress scores on the PSI-SF using a Pearson product-moment correlation. This association was significant ( $r(128) = -.446, p < .001$ ), which supports the previous findings that lower parental self-efficacy is associated with higher levels of parent stress.

Further, it was predicted that lower parent sense of competency scores would be associated with higher parent stress scores. A Pearson product-moment correlation revealed a significant negative correlation between the PSOC Total score and the PSI-SF Total Stress score,  $r(128) = -.639, p < .001$ . This result supports the model that lower parental perception of competency in the parenting role is associated with higher rates of parent stress. To further assess previous models, it was hypothesized that there would be

a significant positive association between parenting stress and child disruptive behavior problems. The Total Stress scores on the PSI-SF were correlated with the ECBI Intensity scores using a Pearson product-moment correlation. As predicted, higher parent stress was associated with higher rates of child disruptive behaviors,  $r(128) = .721, p < .001$ .

Next, to test whether an association between parenting strategies and child misbehavior exists, the Total Scores on the PS were correlated with the ECBI Intensity scores using a Pearson product-moment correlation. As predicted, a significant positive correlation was found indicating that less effective strategies (high Total Score on the PS) were associated with higher child disruptive problem behavior scores,  $r(128) = .255, p = .002$ . To further analyze the association between parenting strategies and child misbehavior, the Laxness Subscale on the PS was correlated with the ECBI Intensity scores using a Pearson product-moment correlation. This result does not support our hypothesis that lax parenting strategies are associated with greater rates of child disruptive behavior,  $r(128) = .132, p = .068$ . Lastly, to test whether parenting strategies are associated with parent stress, the Total Scores on the PS were correlated with the Total Stress scores on the PSI-SF using a Pearson product-moment correlation. As predicted, a significant positive association was found ( $r(128) = .215, p = .007$ ) indicating that less effective strategies (high Total Score on the PS) are associated with higher parent stress.

### **Mediation Models of Parent and Child Interactions**

Mediation analyses were used to examine more complex associations between multiple variables simultaneously to further investigate theoretical models. In all subsequent analyses, severity of autism was used as a covariate so that the associations between parenting stress, discipline strategies, and child disruptive behavior could be examined, regardless of level of autism symptom severity. Since GARS scores were not available for 17 of the participants, these analyses were conducted on a sample of 113. The bootstrapping procedure for mediation analyses was used as it is the recommended and preferred method for determining the statistical significance of a potential mediating variable (i.e., the indirect effect; Hayes, 2009, 2012; Preacher & Hayes 2004, 2008). Significance of the indirect effect is determined by examining the 95% confidence interval (CI) of the sampling distribution of the mean. Confidence intervals that do not include zero are considered statistically significant at the 0.05 level. A measure of effect size cannot be calculated with the analyses due to the presence of a covariate. Following the recommendations of Hayes (2012), 1000 samples were derived from the original sample by a process of re-sampling with replacement. Refer to Table 3 for a summary of the results.

To test the hypothesis that discipline strategies mediate the association between parenting stress and child disruptive behaviors, a series of bootstrapping analyses were conducted. First, the Total score on the Parenting Scale was used as a measure of discipline strategies, and PSI Total score was used as a measure of parenting stress. ECBI Intensity score was used as a measure of the frequency of child disruptive

behaviors. Results indicate a significant mediation effect (S.E.=.0369, 95% CI = .0038 to .1573), indicating that discipline strategies do serve as a mediating variable between parenting stress and frequency of child misbehavior.

To further examine specific aspects of parental stress, an additional mediation analysis was conducted. In this analysis, the Total score on the Parenting Scale was used as a measure of discipline strategies, and the Parental Distress subscale score of the PSI was used as a measure of parenting stress. The PSI Total score includes items related to specific child misbehavior and noncompliance, as well as other sources of stress in parenting role. The PD subscale is based solely on stress unrelated to child misbehavior and noncompliance, and allowed further clarification within existing models of parent and child variables. The ECBI Intensity score was used as a measure of the frequency of child disruptive behaviors. Results indicate a significant mediation effect (S.E.=.1157, 95% CI = .0182 to .5012). Thus, discipline strategies serve as a mediator between overall stress and stress in the parental role, independent of child behavior and frequency of child misbehavior.

To further investigate theoretical models within the literature, the role of parental self-efficacy and competence was examined in relation to parent stress and child disruptive behaviors. The Efficacy subscale score on the PSOC was used as a measure of parental competence as it corresponds most closely with previous research examining parental competence. The PSOC Total score includes satisfaction and motivation

components within parenting that were not part of the parental competence described within the theoretical model. The PSI Total score was used as a measure of parent stress and the ECBI Intensity score was used as a measure of the frequency of child misbehavior. Results do not indicate a significant indirect effect (S.E.=.0785, 95% CI = -.2451 to .0594), indicating that parental self-efficacy does not serve as a mediating variable between parenting stress and the frequency of child misbehavior. In order to examine different aspects of stress for parents, a second mediation was conducted with the Efficacy subscale scores on the PSOC, the PD subscale scores of the PSI, and the ECBI Intensity scores. Results do not indicate a significant indirect effect (S.E.=.1997, 95% CI = -.2979 to .5083), indicating that parental self-efficacy does not serve as a mediating variable between parenting stress independent of child behavior and the frequency of child misbehavior.

As parental competence and self-efficacy reflect how parents perceive their parenting ability, follow-up analyses were conducted to determine whether these variables would mediate the association between parent stress and parental tolerance of child disruptive behaviors. The Efficacy subscale score on the PSOC was used as a measure of parental competence, and PSI Total score was used as a measure of parent stress. ECBI Problem score was used as a measure of parental tolerance of child disruptive behaviors. Results do not indicate a significant indirect effect (S.E.=.0159, 95% CI = -.0018 to .0614), indicating that parental self-efficacy does not mediate the association between parenting stress and parental tolerance for child misbehavior.



Finally, the Efficacy subscale score on the PSOC was used as a measure of parental competence and the PD subscale score of the PSI was used as a measure of parenting stress. ECBI Problem score was used as a measure of tolerance of child disruptive behaviors. Results indicate a significant mediation effect (S.E.=.0355, 95% CI = .0270 to .1699), indicating that parental self-efficacy mediates the link between parenting stress, independent of child behavior and parental tolerance of child misbehavior.

## CHAPTER V

### DISCUSSION

The present study assessed the parent-child relationship within families impacted by ASD. Specifically, parenting behavior, parent stress, child disruptive behavior problems, and child symptom severity within families affected by ASD were examined. Theoretical models (i.e., Deater-Deckard, 1998; Hastings, 2002) encompassing developmental disabilities have suggested associations between these variables; yet, limited research has tested the models beyond simple associations, especially within families of children with ASD. The study first focused on family characteristics and simple associations outlined in the theoretical models. The second focus was to expand existing knowledge of family interactions by assessing the complex associations proposed by theoretical models.

#### **Interpretation of Results**

Prior to examining multiple aspects within the parent-child relationship, parent and child characteristics were assessed independently to gain a greater understanding of families of children with ASD. As expected, parents in our sample were highly likely to experience clinically significant levels of parent stress in the parenting role. This finding corroborates the substantial body of literature which demonstrates that parents of children

with ASD are highly susceptible to stress in handling parenting responsibilities (Blacher & McIntyre, 2006; Dunn, Burbine, Bowers, & Tantleff-Dunn, 2001; Eisenhower, Baker, & Blacher, 2005, 2009; Gupta, 2007; Tomanik, Harris, & Hawkins, 2004). This is especially important for the family as a whole, as parent stress has been shown to have a detrimental effect on child outcome (Osborne, McHugh, Saunders, & Reed, 2008a; Robbins, Dunlap, & Plienis, 1991).

In addition to parent stress, 41% of children in our sample displayed clinical levels of disruptive behavior problems. To our knowledge, this is the first study to explicitly document the rate of disruptive behavior problems within a sample of children with ASD using a well-validated measure to identify children with disruptive behavior problems. Previous findings within the ASD literature have not explicitly documented the rate of disruptive behavior problems, though research has documented high parental endorsement of disruptive behaviors (Baker & Feinfield, 2003), difficulties within the parent-child relationship (Gadow, et al., 2005; Lecavalier, 2006; Lecavalier, Leone, & Wiltz, 2006; Tonge & Einfeld, 2003), and high rates of co-occurring psychiatric disorders (Leyfer et al., 2006; Simonoff et al., 2008). In addition, the current study targeted disruptive behavior problems unrelated to ASD behaviors. Some confusion within the ASD literature has emerged as many researchers have included symptoms of ASD (e.g., stereotypy) within the definition of disruptive behavior problems. Our finding clearly separates disruptive behavior problems unrelated to ASD symptoms. The high rate of

disruptive behavior problems exhibited by children with ASD likely influences child learning, as well as impacts parents in treatment.

ASD symptom severity was also addressed. As expected, children with more severe ASD symptoms had parents who are more stressed. This supports previous ASD research that has demonstrated this association (Hastings & Johnson, 2001) and adds support to the proposed theoretical models. Although a large percentage of parents of children with ASD were stressed, those with children with more severe ASD symptoms had the highest levels of parent stress. This may be due to increased communication difficulties between parent and child, as well as lower rates of child adaptive functioning. Stress may also come from a lack of respite care and support for parents to take a break in their parenting role and feel comfortable with a knowledgeable provider. Further, these families may also have more medical needs (e.g., nutrition, pharmacological treatment) that add to increased stress in the family. Moreover, children with increased impairment may have even more services than families of children with less severe symptoms (e.g., speech therapy, occupational therapy, intensive early intervention programs). These therapies are time consuming, costly, and often delayed due to long waitlists for services.

Parent stress was also linked to dimensions of parenting. Parents who were stressed had lower perceptions of their ability to parent, and tended to use less effective parenting strategies when interacting with their children. One interpretation is that higher levels of stress lead to lowered perceptions of parental ability and more ineffective

parenting techniques. Another interpretation is that lack of parental competence and low self-efficacy result in increased levels of stress due to parental uncertainty. However, the association likely stems from bi-directional impacts between stress and parenting behavior. To date, only one previous study within the ASD literature has demonstrated this bi-directional link (Osborne & Reed, 2010). Although parents with high stress may perceive their parenting as ineffective or incompetent, it may be that children with ASD do not respond to typical parenting techniques, and so a change in child behavior is not as evident, leading to frustration for parents. Further, given that parents of children with ASD are stressed in their parenting role already, additional factors such as time and energy may make it more difficult for parents to use more effective parenting techniques. Moreover, parents of children with ASD may not get the same reinforcement when interacting with their children (e.g., reciprocity) and may change their parenting in response to lack of child cues.

To further understand how parent stress and child disruptive behavior may influence each other, parenting strategies in relation to both disruptive behavior problems and parent stress were examined. Parents who used more ineffective parenting strategies were likely to have children with higher rates of disruptive behavior problems. Additionally, parents who used more ineffective parenting strategies had higher rates of parent stress. Although the current study did not find an association between lax parenting and child disruptive behavior problems, there was a trend and may still be an area for future directions. Parents who have more stress may be unsure how best to

parent their child, and the child may act out with inconsistent parenting, or parents may withdraw in order to handle the high level of stress. Parents may feel rejected by children who display more disruptive behavior. Additionally, parents may feel that the disruptive behavior is intrinsic to ASD, thereby losing hope that the behavior could improve. Lastly, parents who are stressed may be more apt to use harsh discipline techniques (e.g., spanking, yelling) and inadvertently increase child disruptive behavior over time.

Given the heterogeneous symptomatology within the ASDs and the proposed changes to the DSM-5, the current study specifically included a measure of ASD symptom severity. This quantitative assessment of ASDs may be more sensitive than categorical diagnosis when assessing other associated variables (Beglinger & Smith, 2001; Bitsika, Sharpley, & Orapeleng, 2008; Walker et al., 2004). Further, research has found associations between lower IQ scores and increases in severity of ASD symptoms (Murphy, Healy, & Leader, 2009; O'Brien & Pearson, 2004). Therefore, the severity of ASD was controlled in complex analyses so that associations between parenting stress, discipline strategies, and child disruptive behavior could be examined, regardless of level of autism symptom severity.

Collectively, we found a number of associations between parent behavior, stress, child disruptive behavior, and severity of ASD symptoms. Parenting strategies mediated the association between parent stress and child disruptive behavior problems while controlling for ASD symptom severity. This suggests that certain parenting behaviors

may elicit more frequent and perhaps more severe child behavior problems, above those influenced by ASD symptom severity and level of parent stress. This provides further support to theoretical models (Deater-Deckard, 1998; Hastings, 2002) and is consistent with Osborne and colleagues' (2008a) findings that the parent behavior of limit setting mediated the association between parent stress and child disruptive behavior problems.

We also examined a parenting strategy that is classified as harsh or overreactive. This parenting strategy did not mediate the association between overall parenting stress and child disruptive behavior problems. However, after analyzing the model with an index of parent stress calculated independently of child behavior, a harsh parenting strategy mediated the association between parent stress and intensity of child disruptive behavior problems. This suggests that harsh parenting of a child with ASD leads to elevated levels of child disruptive behavior problems, regardless of ASD severity and parent stress unrelated to child behavior. To date, no other studies within the ASD literature have differentiated the types of parenting strategies and their influence on stress and child variables. Further, it is likely from previous research that bi-directional links are present between most of the variables in the model. However, we propose that parenting behaviors have a direct effect on child disruptive behavior problems and should be an area for future directions.

Parental self-efficacy and competence were examined in relation to parent stress and child disruptive behaviors. Parental self-efficacy did not mediate the association

between parent stress and intensity of child behavior problems. However, we postulated that parental self-efficacy is a perceived parental ability, and therefore may be more related to parental tolerance of disruptive behavior problems. Parental self-efficacy mediated the association between parent stress unrelated to child behavior, and parental tolerance of child disruptive behavior. This indicates that parents who are confident and competent in their parenting role are more tolerant and better able to handle child disruptive behavior problems.

### **Clinical Implications**

The call for collaboration between families and providers in the treatment of children with ASD (NRC, 2001) has been made. Yet, over a decade later, there does not appear to be a unified method to include parents or train them in treatment for children with ASD. Results from the current study have several clinical implications. First, parents of children with ASD exhibit elevated levels of parent stress. Parent stress should be monitored and intervention should consider treatment for the child as well as individual treatment for parents to reduce clinical levels of stress. Second, the study provides further evidence that existing parent training programs for young children with ASDs should focus on parent behavior as well as child behavior. Comprehensive treatments for children with ASD should take into account parents' stress, wellbeing, and specific challenges that exist in the parenting role when raising a child with ASD. Our results indicate that parents would benefit from specific behavioral treatments to handle child disruptive behavior problems. The parenting skills taught in standard parenting



programs for disruptive behavior problems have the potential to have a substantial impact on child behavior. It is currently unclear whether families are receiving behavioral management training specifically for child disruptive behavior problems, or if they are, the extent and order in which it is delivered.

Increasing parents' self-efficacy and practice of effective behavioral management techniques should decrease child disruptive behavior problems. Parent training programs that target these parent skills should result in fewer behavior problems. Decreases in child disruptive behavior should allow more opportunities for children to acquire positive skills and lower ASD symptom severity. Therefore, increases in parent self-efficacy and use of effective behavior strategies may lead to gains in child skills early in the parent-child relationship, and in turn may later improve child response to interventions and potentially lower parental stress.

Parents without direct intervention may not intervene during child disruptive behavior problems because the behavior may be perceived as intrinsic to the child's ASD, instead of a functional response to the environment. The lack of intervention for disruptive behavior problems may lead to a pattern of interaction maintained by avoidance or escape from parental demands. Further, without intervention, parents may overreact to child disruptive behavior out of frustration, and may possibly lead to attention-maintained behavior. Moreover, decreases in child disruptive behavior and improvements in parent-self efficacy may lead to better treatment outcomes for children with ASD.

### **Strengths and Limitations**

The current study has several notable strengths. First, the study had a large and diverse sample of children with ASD from across the United States. The children had diverse diagnosis on the spectrum and had a range of symptoms from mild to severe. An additional strength of the sample is that it included a younger age of children than has previously been examined within the proposed theoretical models. We were able to test the models to see if results of studies of older ASD children would be replicated with a younger and more representative sample of children with ASD.

The methodology was strong, with well-validated measures and simultaneous assessment of multiple factors (i.e., parent stress, parenting behavior, child disruptive behavior problems, and ASD symptom severity). This parallels existing theoretical

models, unlike previous research, providing a more thorough understanding of interactions involved within the parent-child relationship.

Furthermore, parent stress within the parenting role was the primary focus of this study. Previous studies have not clearly identified specific areas of stress or separated stress from symptoms of depression. Additionally, ASD symptom severity was measured separately from disruptive behavior problems. Therefore, the rate of children with ASDs meeting clinical levels of disruptive behavior problems was assessed. Furthermore, controlling for severity of ASD symptoms yields a clearer interpretation of the results. Lastly, using a quantitative measure of ASD severity more closely matches the proposed changes to the DSM-5.

This study also had several limitations. Although participants were recruited from all over United States representing a variety of geographic locations, the sample was not representative in terms of ethnic diversity. Caution should be used when applying these results to parents of children with ASD of other ethnicities. Furthermore, since the sample was obtained from an online network of parents, it is possible that parents and families who register with the IAN network differ from parents and families who are not registered. Parents in our study had access to the internet, and parents without access may differ on important socioeconomic factors. Additionally, parents involved in the IAN may have been more proactive in their parenting role than other families. For future studies, it may be worthwhile to seek parents who are not actively registered with or

involved in ongoing research and parenting groups to determine whether, and to what extent, they may differ from parents in the current study.

Next, the current study did not confirm the diagnosis of an ASD. However, nearly all children scored in the likely range to meet criteria for diagnosis on a parent-report assessment tool and have previously been screened through the IAN to ensure accurate participation in their ongoing research projects. Another possible limitation of this study was the use of only parent-report measures. We acknowledge that having all data based on parent-report may be a potential for method variance which may have affected the results. However, all of the measures are widely used and well standardized. Future research may benefit from additional measures of these factors to corroborate and replicate the existing findings. Additionally, direct observation would greatly support the current findings, although this would be both time-consuming and costly.

### **Future Directions of Research**

A number of future directions come from the results of this study. First, it would be important to replicate the current findings with other samples of parents. Replications should include more ethnically diverse samples and include families who are not engaged in parent groups or research groups to determine whether the findings of the present study replicate to others. Studies should continue to monitor rates of disruptive behavior problems in children. Additionally, examining when disruptive behaviors emerge in children with ASD and how those behaviors may change over time would add

substantially to the current literature. Further, assessing the rate disruptive behavior problems for parents versus other providers (e.g., teachers, therapist) may provide further insight about parent-child interactions. Moreover, research is needed to understand the areas of stress for parents of children with ASD. Assessing how treatment services for children with ASD impact parents is important as stress has been shown to have detrimental impacts on child outcome.

In addition, future studies should be developed using a longitudinal design to examine how ASD symptom severity, child disruptive behavior problems, and parent stress interact over time. Temporal precedence and directionality would allow for improved treatments and allow treatments to follow an order that may maximize gains for both the child and the parent. From this, researchers should expand the findings by using additional measures and observational analysis. Direct observation of parent strategies would allow for a functional analysis to determine how certain strategies relate to child disruptive behavior problems. The existing parent training programs for children with ASD primarily focus on child behavior and do not emphasize changes in parent interactions. Future studies should include parenting variables within the analysis of programs above those of satisfaction with the program.

Another direction of research should include individual parent treatment designed to reduce parent stress. Treatments that reduce parent stress should assess if any collateral changes occur in parent behavior, child disruptive behavior, and child gains. Further, research that compares outcomes of parent training programs designed to

improve ASD symptoms should be compared to programs designed to decrease child disruptive behavior problems. Outcomes should include measures of parent competency, parent stress, child disruptive behavior problems, ASD symptom severity, and child outcome scales (e.g., adaptive behavior, communication, social interaction). Parents should be involved in the treatment of their children and more research is warranted to determine what role the parents would prefer.

## **Conclusion**

It is hoped the current study has contributed to gaps within the ASD literature, and that it will serve as a stepping-stone for future research in this area. Overall, the study supported existing literature, showing that parents of children with ASDs exhibit elevated levels of parent stress and children in these families have high levels of child disruptive behavior problems. Further, children with more ASD symptoms tended to have more behavior problems, and these families tended to report higher levels of parent stress. To date, few studies within the ASD literature have examined how parents impact children, how children impact parents, and how the parent-child relationship impacts treatment. Further, evidence-based practices to improve ASD symptomatology largely do not address parent stress, parent strategies, and training for parents to handle disruptive behavior problems. Contributions were made to the literature by assessing both parent and child variables simultaneously. Our findings suggest that parent training programs designed to increase parent self-efficacy and competence would have substantial impact on parents and children with ASD because self-efficacy and

competence mediated the association between parent stress and child disruptive behavior problems. The current findings support proposed theoretical models within the literature and more research is warranted to determine best practices for families impacted by ASDs. It is hoped that the current project can be expanded on to provide additional contributions to the current literature and to the field of ASD and parenting research.

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## APPENDICES

APPENDIX A

COMPLETE LITERATURE REVIEW

## INTRODUCTION

Research suggests that parents of children affected by Autism Spectrum Disorders (ASDs) have elevated levels of parent stress (Blacher & McIntyre, 2006). Additionally, children of these parents are likely to experience elevated levels of child disruptive behavior problems (Tonge & Einfeld, 2003). Proposed theoretical models (i.e., Deater-Deckard, 1998; Hastings, 2002) have suggested that there may be associations not only between parent stress and child disruptive behavior, but also between parent behaviors (e.g., limit-setting and efficacy) as well as child ASD characteristics (e.g., symptom severity). However, limited literature within the ASD population has tested the associations between these variables. Determining best practices for parent-training for parents of children with ASD will remain difficult without establishing and evaluating the effects of parenting stress, parent behaviors, and child disruptive behavior problems. Hence, the current study seeks to evaluate possible significant correlates of child disruptive behavior problems such as parent stress in the parenting role, the parent behavior of limit setting, and parental self-efficacy.

Furthermore, Osborne and colleagues (2008a) found that the parent behavior of limit-setting mediated the relationship between parenting stress and subsequent childhood behavior problems. This finding suggests that there may be certain parenting behaviors that may elicit more frequent and perhaps more severe child behavior problems. To my knowledge, no other study has been conducted to replicate this finding. Thus, the current study will assess these variables and determine if similar results occur. Implications for parent-training programs for parents of children with ASD and comorbid disruptive behavior problems will be discussed.

A review of the literature is presented in chapter 2. The review starts with a discussion of the ASDs. Diagnostic characteristics of each ASD are presented. Additionally, the term

developmental disabilities is defined and distinguished as an overarching term for many disorders including ASDs. Next, child disruptive behavior problems within the ASD population are reviewed. Further, parent stress is examined within the ASD population. Specifically, multiple factors that influence parental stress such as child symptom severity, availability of treatment programs, and child disruptive behavior problems are reviewed. An evaluation of the effect of each variable is presented with a rationale for increased parent training. Following this section, parenting strategies and parent training for parents of ASD is introduced. Specifically, comprehensive applied behavioral analytic treatment programs are outlined followed by comprehensive treatment programs designed for children with disruptive behavior problems. Moreover, areas of parenting behavior and subsequent child behavior are examined in reference to current parent training programs offered to parents of children with an ASD. Lastly, a need for clarification of treatment of child disruptive behavior problems within the ASD literature is presented with supportive rationale. Subsequent chapters deal with the purpose of the present study and the method.

## **Chapter II**

### **REVIEW OF THE LITERATURE**

#### **Autism Spectrum Disorders**

Families affected by Autism Spectrum Disorders (ASDs) are a growing concern among the mental health field as current prevalence rates for ASD have been estimated to be as high as 1 per 110 births (Center for Disease Control and Prevention, CDC, 2009). As of 2007, the United States has an estimated 673,000 children aged 3 to 17 diagnosed with an ASD (Kogan et al., 2009). ASDs fall under the Pervasive Developmental Disorders category and are generally believed to be neurodevelopmental in origin (Lacroix, Guidetti, Roge, & Reilly, 2009; Matson,

2007a, 2007b; Niklasson, Rasmussen, Oskarsdottir, & Gillberg, 2009). Specifically, ASDs are comprised of Autistic Disorder, Asperger's Disorder, Pervasive Developmental Disorder – Not Otherwise Specified (PDD-NOS), Childhood Disintegrative Disorder (CDD), and Rett's Disorder. However, due to the low prevalence rates of both CDD and Rett's Disorder, the remainder of the article will address Autistic Disorder, Asperger's Disorder, and PDD-NOS when referencing ASDs. The fourth version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) reports children diagnosed with an ASD have varying levels of impairments in the areas of social interaction, communication, and restricted and stereotyped patterns of behavior [American Psychiatric Association (APA), 2000].

ASDs are thought to be present at birth and advances in diagnostic techniques have allowed identification of children as early as 12 to 18 months of age (Johnson & Myers, 2007; Kleinman et al., 2008; Kuban et al., 2009; Matson, Wilkins, Sevin, et al., 2009; Matson, Wilkins, Sharp, et al., 2009; Watson, Baranek, & DiLavore, 2003). Kogan and colleagues (2009) revealed that the odds for boys to have an ASD were four times as high as the odds for girls. Specifically, children diagnosed with Autistic Disorder per DSM-IV (APA, 2000) must meet at least two criteria involving social interaction (e.g., marked impairment in multiple nonverbal behaviors, lack of social or emotional reciprocity), at least one criterion involving communication (e.g., delay in spoken language, repetitive use of language), and at least one criterion involving restricted, repetitive, and stereotyped patterns of behavior, interests, and activities (e.g., preoccupation with parts of objects, inflexible routines or rituals, repetitive motor movements). Moreover, individuals with Autistic disorder must meet a total of six or more criteria within the three domains and must have one or more delays or abnormal functioning prior to age 3 in social interaction, social communicative language, or symbolic/imaginative

play.

Asperger's Disorder can be differentiated from Autistic Disorder when there is no clinically significant general delay in language development, cognitive development, or the presence of the development of age-appropriate self-help skills, adaptive behavior, and curiosity about the environment in childhood. Lastly, PDD-NOS is diagnosed when the criteria are not met for another Pervasive Developmental Disorder, but there is still severe and pervasive impairment in development. Individuals with PDD-NOS may have subthreshold symptomatology, late age of onset, atypical symptomatology, or a combination of the three.

Given the heterogeneous symptomatology within the ASDs, many researchers are displeased with the current taxonomic categorical approach used in the DSM-IV-TR (Beglinger & Smith, 2001; Bitsika, Sharpley, & Orapeleng, 2008; Walker et al., 2004). Instead of differentiating the disorders via qualitative differences per DSM-IV-TR, the proposed changes to the DSM-5 categorize symptom severity using a quantitative dimensional framework (APA, 2011). Therefore, the proposed changes combine Autistic Disorder, Asperger's Disorder, CDD, and PDD-NOS into a single diagnostic category, Autism Spectrum Disorder.

The core deficits of individuals with ASDs in social interaction, communication, and restricted and stereotyped patterns of behavior often result in challenging or undesirable behaviors such as temper tantrums, noncompliance, self-injury, and aggression (Gadow, Devincent, Pomeroy, & Azizian, 2005; Lecavalier, 2006). In addition to these core deficits, approximately 50 to 70% of individuals with an ASD also have a co-occurring intellectual disability, ID (Fombonne, 2003, 2005; LaMalfa, Lassi, Bertelli, Salvini, & Placidi, 2004; Matson & Shoemaker, 2009). In an extensive review on ID and ASD, Matson and Shoemaker (2009) emphasized that the majority of studies refer only to ASDs and forgo mention of possible

co-occurring IDs. However with such a large percentage of children meeting both criteria, it is important to note that lower IQ scores are associated with poorer prognosis in early intervention programs (Ben Itzhak, Lahat, Burgin, & Zachor, 2008; Ben Itzhak & Zachor, 2007). Moreover, lower IQ scores are associated with increases in severity of ASD and other challenging behaviors (Murphy, Healy, & Leader, 2009). Additionally the overarching term, Developmental Disorders (DD), has also been used within the literature to encompass individuals with either ASD, ID, or other conditions (e.g., chronic illnesses, traumatic brain injury, neurological anomalies; Patel, Greydanus, Calles, & Pratt, 2010). Hence studies that use a DD population often have a subset of individuals with ASD.

Due to the complexity of the symptoms of ASD, parenting a child with an ASD presents a number of additional challenges compared to parents of a child without ASD. Moreover, parents of children with ASD and co-occurring ID may experience more difficulties in the parenting role due to the association of behavior problems and symptom severity in children with lower IQ scores. Brereton and colleagues (Brereton, Tonge, & Einfeld, 2006) compared 367 individuals with ASD and 550 individuals with ID for emotional and behavioral problems. They found that children with ASD were more prone to meet criteria for an additional psychiatric disorder, as well as have higher levels of disruptive behavior, anxiety symptoms, hyperactivity, and depression, compared to children with ID. Recent research suggests that approximately 70% of individuals with ASD present with at least one co-occurring psychiatric disorder (Leyfer et al., 2006; Simonoff et al., 2008). Consequently, these additional behavioral problems, such as overreactivity, impulsiveness, tantrums, aggression, and self-injury, along with the core deficits of ASDs, cause interference in daily living skills and parent-child interactions (Gadow, et al., 2005; Lecavalier, 2006; Lecavalier, Leone, & Wiltz, 2006; Tonge & Einfeld,

2003). Hence, parents in these families are more likely to exhibit high rates of parental stress compared to parents of typically developing children, as well as parents of children dealing with other childhood disabilities or health problems (Blacher & McIntyre, 2006; Dunn, Burbine, Bowers, & Tantleff-Dunn, 2001; Eisenhower, Baker, & Blacher, 2005, 2009; Gupta, 2007).

Interestingly, Baker and Feinfield (2003) found that parents of four- to seven-year-olds report that noncompliance, oppositional behavior, and aggression are the most prevalent behavioral problems in children with ASDs. According to Zelazo (2001), noncompliance in children with ASD is often evident by 18 months of age. The early appearance of noncompliance can be seen prior to development of imitative responses, and may possibly be a factor in retarding language development. Therefore, Zelazo concludes that improving compliance should be the first step in programs to stimulate social-communicative development.

However, despite the large number of children with ASDs who have disruptive behavior problems, many of the existing parent training programs for young children with ASDs continue to focus mainly on how to deliver learning-based interventions to children and neglect a critical need for behavioral management techniques to decrease unwanted behaviors and increase compliance (Matson, Mahan, & Matson, 2009). There is a paucity of research on parent-implemented programs for children with ASDs that identify both a reduction in child disruptive behavior problems and a reduction in parenting stress. Due to the significantly high rates and persistence of behavioral problems in children and adolescents with developmental delays (Nicholas et al., 2008), more research is warranted to understand how parenting skills and parental stress in the parenting role may affect childhood behavior problems.

### **Parental Stress**

Realizing the important role of parents' involvement in their children's treatment and day-to-day interactions, researchers developed a basic theoretical framework for examining the



links between child behavior problems, parenting stress, and parenting behavior within the DD populations to include families affected by children with ASD (Deater-Deckard, 1998; Hastings, 2002). Deater-Deckard (1998) proposed a reciprocal relationship between childhood behavior problems, parenting stress, and parenting behavior. In accordance with the model, treatment of child disruptive behavior problems initially via parent-implemented interventions may increase positive child outcomes when receiving other therapeutic skills that require the child to be compliant and attentive. Also, working with the parents may break an unintentional cycle of reinforcement that may be maintaining the childhood behavior problems. Decreases in unwanted childhood disruptive behaviors may result in more opportunities for the individual with ASD to acquire more adaptive behavior skills and communication exchanges. As a result, parenting stress may decrease with child gains in treatment (e.g. communication, adaptive functioning) and increases in parent self-efficacy.

However, Hastings (2002) noted that the Deater-Deckard's model assumed directionality and may be missing other links that are important in relation to child disruptive behavior and parenting behavior. The current evidence in the empirical literature is limited to support all of the elements within the original model. Therefore, Hastings proposed an expanded model of the associations that included parenting psychological resources (e.g., coping, self-efficacy) and parental negative emotional reactions that may play a role in childhood behavior problems and parent stress. For example, parents of children with high rates of problem behaviors may use inappropriate coping strategies that maintain or increase problem behaviors. For instance, Pottie and Ingram (2008) followed 93 parents over a 12-week period and assessed bi-weekly stressful situations in the parent-child relationship, as well as how parents chose to cope in response to the stressor. They found that as parents used distraction coping strategies in response to a daily

parental stressor, they reported less daily negative mood. Although some coping strategies may be effective in the short-term for parents of children with ASD, more research is warranted to see if such parent behavior may exacerbate childhood behavior problems when children are required to listen (i.e., comply) to parental demands. Therefore, some coping strategies may cause longer lasting effects on parental mental health and at the same time not address the on-going child disruptive behavior problems. In conclusion, there may be more factors that account for the interactions between childhood behavior problems, parenting stress, and parenting behavior than the previous model proposed by Deater-Deckard, and further research is needed to link each association.

Despite the models identifying childhood behavior problems as a major component of parent stress and parenting behavior, it is unclear whether parents in the general community are receiving adequate training to handle the aspects of child disruptive behavior problems that are emitted by many children with ASD. For instance, in a sample of 47 parents of 2-to 3-year-old children at risk for various DDs, the occurrence of inappropriate child behavior was followed by unintentional positive reinforcement 77% of the time (Passey & Feldman, 2004). The high rate of reinforcement increases the likelihood of future inappropriate behaviors. In theory, inappropriate behaviors will exacerbate parent stress. In turn, high levels of parental stress may lead parents to change parenting behaviors such as avoiding lengthy conflicts with their child by giving into temper tantrums. Furthermore, there is some evidence that community mental health agencies providing services to parents of children with ASD and co-occurring disruptive behavior problems are not adequately incorporating empirically-supported parent training strategies within treatment (Brookman-Frazee, Taylor, & Garland, 2010). For example, Brookman-Frazee and colleagues examined the inclusion of parenting strategies in treatment

delivered through a community mental health agency for parents and children with ASD. They found the amount and thoroughness of the strategies covered to be at relatively low intensity compared to standard parenting programs for children with disruptive behavior problems.

Specifically, parents who are provided with more intense treatments designed for children with disruptive behavior problems may subsequently increase their parental self-efficacy (e.g., limit-setting behaviors) as well as decrease levels of parenting stress. The current literature is unclear if parent training programs for children with ASD are targeting child disruptive behavior problems in addition to ASD symptoms and if so whether specific parent training programs are reducing parent stress in the parenting role, improving child compliance, and increasing parental self-efficacy.

As child-rearing in general adds a number of responsibilities and stressors to parents of even typically-developing children (Crnic & Greenberg, 1990), parents of children with DDs, including ASD, appear to be at heightened risk for elevations in parenting stress compared to those of typically-developing children (Blacher & McIntyre, 2006; Dunn, et al., 2001; Eisenhower, et al., 2005; Gupta, 2007). For instance, Gupta (2007) reported that parents of children with a DD reported higher levels of parenting stress on the Parent Stress Index (PSI: Abidin, 1995) than parents of children with ADHD, HIV, asthma, and typically developing controls.

Additionally, Eisenhower, Baker, and Blacher (2005) examined differences in parenting stress within children with ID and a subset of co-occurring disorders. Data from parents of children with Down Syndrome, Cerebral Palsy, ASD, undifferentiated delays, and typically-developing children were collected when children were ages 3, 4, and 5 years. Results indicated that parents of children with ASD had higher levels of parenting stress as measured by perceived

child negative impact scores on the Family Impact Questionnaire (FIQ; Donenberg & Baker, 1993) at all but age 5 when they were only slightly lower than scores from families with children with Cerebral Palsy. Moreover, even after controlling for childhood behavior problems and cognitive level, parents of children with ASD still exhibited higher rates of parenting stress than other parents of children with other DDs. The finding that parents of children with ASD have higher levels of parent stress even after controlling for other childhood variables, suggests that there are multiple areas of potential stressors when parenting a child with ASD. The authors noted that since children with ASD have deficits and problem behaviors in multiple areas, parents are exposed to different issues (e.g., stereotypy, communication issues) that may not be captured on standard childhood psychological measures (i.e., Child Behavior Checklist, CBCL; Achenbach, 2001). Therefore, more research is warranted to expand measures to capture all potential areas of child problems that may add to parent-child related stress in the ASD population. Also, current parent training programs for child disruptive behavior problems may benefit from the knowledge of specific ASD problem areas (e.g., stereotypy, communication deficits, etc.) outlined in the literature.

Since approximately two-thirds of parents of children with ASD report experiencing clinically significant levels of child-related stress (Tomanik, Harris, & Hawkins, 2004), a number of researchers have examined areas of potential stressors for parents of children with ASD. Specifically, Hastings and Johnson (2001) reported that parenting stress in parents of children with ASD was associated with increased child symptomatology and severity of impairment. Not only does a parent of a child with ASD take care of typical parenting activities, he/she must also deal with a number of other obligations in his/her parenting role to rear his/her child. These additional tasks can include several medical care appointments for diagnosis and check-ups (e.g.,

pediatrician, psychologist), scheduling, attendance, and participation of child treatment components [e.g., speech therapy, occupational therapy, intensive early intervention programs (IEIP)], and parental involvement in activities related to their child's condition (e.g., attending support groups, reading material on ASD, etc.). As treatment regimens can differ significantly based on geographic location, family beliefs, and other factors such as funding, parents of children with ASD have typically tried between 7 and 9 different types of therapy and most families currently take part in 4 to 6 therapies (Goin-Kochel, Myers, & Mackintosh, 2007). However, despite the empirical evidence for treatments grounded in applied behavior analysis to reduce ASD symptomatology, there are other treatment options for parents of children with ASD that do not have empirical support (e.g., special diets, alternative medicine). The conflicting message of therapy treatments can be especially challenging for parents when seeking help for their children, as they are often put on early intervention waitlists for empirically-based services. Additionally, funding treatments can be very expensive to the families if health insurance programs or governmental agencies do not compensate treatment providers for services provided.

**Effects of Parent Stress.** Researchers have concluded that children who score high in symptom severity and low in adaptive behavior skills prior to intervention are less likely to have as many gains as children who score low in symptom severity and high in adaptive behavior skills (Perry, Cummings, Geier, Freeman, Hughes, & Managhan et al., 2011; Ben Itzhak & Zachor, 2011). However, the level of parenting stress within an ASD population has been shown to have an effect above and beyond initial child characteristics. For instance, Robbins, Dunlap, and Plienis (1991) were the first to empirically document that levels of parenting stress were inversely related to child outcome within an ASD population. More recently, researchers have

demonstrated that initial levels of parenting stress had detrimental effects on acquiring educational and adaptive functioning skills (Osborne, McHugh, Saunders, & Reed, 2008). Osborne and colleagues examined families after 9 to 10 months of a combination of ongoing time-intensive programs (>15.6 hours/week) for children with ASD aged 2.6 to 4.0 years. They found that parents' initial levels of stress had detrimental effects on child outcome gains in the area of educational and adaptive functioning skills. It is also interesting to note that intellectual functioning was not influenced by levels of parenting stress. The finding that intellectual functioning is not influenced by parenting stress may add additional support to the view that behavior problems are most concerning and susceptible to parenting stress.

Furthermore parenting stress may affect mothers and fathers differently. Davis and Carter (2008) found that mothers tend to be more affected by their children's eating habits, sleeping behaviors, and emotional problems, whereas fathers are more affected by their children's externalizing behaviors. Although parents of children with ASD appear to be most susceptible to stress in the parenting role, their level of stress related to general life stressors is no higher than that of the general populations (Osborne & Reed, 2008). The elevation of stress in the parenting role is likely caused by the added challenges of raising a child with special needs who has deficits in communication, education, and adaptive skills, as well as likely having a number of behavioral problems. Therefore, it is important to note that parents of children with ASD may experience stress from other aspects of their life not pertaining directly to the parenting role. However, for the current study the term 'parental stress' addresses stress within the parenting role and not general stress from daily living activities outside the parenting role such as work or marital conflict.

Given that parenting stress in parents of children with ASD is linked in some way with child disruptive behavior problems, researchers have begun to examine the directionality of the association and analyze which variables may influence parenting stress. A number of researchers focusing on non-ASD populations have shown a direct link between parenting stress and child behavior problems (Anthony et al., 2005; Blader, 2006), however few studies have examined similar questions within an ASD population. For instance, Lecavalier, et al. (2006) reported a bi-directional link between parenting stress and child behavior problems in 293 children and adolescents with ASD across a 1-year period. The authors found that parent stress and behavior problems exacerbated each other during that time period. Moreover, Osborne and Reed (2010) found a bi-directional link between parenting stress and perceived parenting behaviors among 138 families with a child with ASD. Specifically, parenting stress and the parent behaviors of involvement, limit-setting, and communication with the child, interacted across time. Hence, the lower the level of parenting stress, the more favorable parents perceived their involvement with their child, their ability to have adequate limit-setting for their child, and finally better communication skills with their child. However, the parenting behavior of supporting child autonomy was not associated with parenting stress. Although supporting child autonomy was not associated with parent stress, the finding that other perceived parenting behaviors were linked with levels of parent stress may allow further examination of how treatment programs for parents of children with ASD can incorporate those skills to foster parental self-efficacy.

**Parenting Strategies and Parent Training.** Realizing that certain parenting behaviors may directly relate to childhood behavior problems over and above parent stress, Osborne, McHugh, Saunders, and Reed (2008) analyzed the link between parent stress, parent behavior of

limit-setting, and child behavior problems over a 9-month period among families with children with ASD. The parent behavior of limit-setting mediated the relationship between parenting stress and subsequent childhood behavior problems. This finding suggests that there may be certain parenting behaviors that may elicit more frequent and perhaps more severe child behavior problems. Therefore, as suggested in the literature, intervention programs that focus on providing behavior management skills may have a substantial benefit for both the parent and the child (Lovaas & Smith, 2003). There is widespread support for treatments aimed at specialized behavior management techniques to reduce child problem behavior and specific behavior analytic treatment approaches that reduce ASD symptomatology. A combination of the behavioral methods may be best suited to promote a healthy parent-child relationship that fosters the developmental and intellectual needs of the child. However, the current treatment outcome literature within the parent training programs using behavior analytic strategies to reduce ASD symptomatology is unclear regarding the extent to which parents of children with ASD and co-occurring disruptive behavior problems are receiving specialized skills to specifically target and reduce child disruptive behavior problems over and above ASD symptoms.

Although teaching behavioral skills to parents of children with ASD has been conducted in several modalities since the 1980s, most attention has been on teaching the parent to deliver learning-based opportunities to his/her child to reduce ASD symptoms, and not primarily on behavioral management techniques often used with children with disruptive behavior.

Researchers have often suggested that treating parental stress should take place after initial parenting programs designed to deliver learning-based interventions or become a separate treatment all together. In fact, few treatment outcome studies within the ASD literature have examined interventions that assess child behavior problems, parenting stress, and parenting



behaviors simultaneously. The current literature is unclear whether many families are receiving behavioral management training specifically for child disruptive behavior problems at the onset of treatment, or if they are, the extent to which it is delivered. The absence of such training may decrease parental ability to handle disruptive behavior and decrease opportunities for a child to learn new tasks in the home. Additionally, the absence of such training could continue an on going cycle of reinforcement for child disruptive behavior problems. Parents who have high self-efficacy and practice behavioral management techniques may allow more opportunities for children to acquire skills and lower symptom severity. Therefore, increases in parent self-efficacy may lead to an increase in child skills early in the parent-child relationship, and in turn may later improve child response to interventions and potentially lower parental stress caused by the parenting role. Further research is warranted on the components of parent training programs used with the ASD population to determine the effects of treatment on both parenting behavior and child behavior.

### **Overview of Treatments Involving Parents**

Traditionally, the role of parent training interventions have differed between parents of children with ASD and parents of children with disruptive behavior problems. Although both traditions are based on operant conditioning procedures, historically parents of children with ASD have been included in training to learn methods to teach their children specific skills (e.g., functional play, communication, joint attention); parents of children with disruptive behaviors, however, have historically been included to improve parenting practices to increase child compliance and reduce disruptive problem behaviors (see Brookman-Frazee, Vismara, Drahot, Stahmer, & Openden, 2009; Brookman-Frazee et al., 2006, for review). For this reason, few studies within the ASD literature have looked at parenting behavior, parent stress, and child

behavior problems simultaneously. While there is a paucity of research on parental behavior and its impact on child disruptive behavior within the ASD population, there is a plethora of research on the efficacy of including parents in the implementation of applied behavior analytic treatments for children with ASD to foster child skills in the areas of development, education, and adaptive functioning. In fact the National Research Council (NRC, 2001) considers the use of parents as treatment providers an essential component of intervention. The ideal that parents have many opportunities to expand and generalize skills to their children throughout the day is a commonality in treatments for children with ASD. As a whole, parents generally take part in at least some aspects of treatment for children with ASDs with varying degrees of involvement. The degree of involvement can vary widely by family and intervention services with some parents spending several hours a week employing specific direct teaching trials, others incorporating naturalistic (i.e., incidental) learning opportunities, and others working with professional agencies (e.g., school department, health insurance) to ensure adequate treatment of their children. In addition, many parents take part in a combination of the three roles (see Matson, Mahan, and Matson, 2009 for review of methods of parent training).

For instance, one of the most widely employed interventions to date for children with ASDs, the UCLA model (i.e., the Lovaas method), includes the role of family participation and meets the criteria by Chambless and colleagues (Chambless et al., 1998; Chambless et al., 1996) to be a “well-established” treatment as reviewed by Rogers and Vismara (2008). Smith (2010) described the role of family participation within the UCLA model. He stated that parent roles in intervention are to attend team meetings and approve of the current curriculum for their child, work alongside a team member for 5 hours a week for 3-4 months and become an effective therapist for their child, and to facilitate play groups and appropriate school placements.

Additionally, several other comprehensive treatments for children with ASDs include the use of parents as interventionists. For example, in a review of Pivotal Response Training (PRT), Koegel and colleagues described the parent roles in intervention as attending parent training sessions, establishing motivational techniques to enhance learning opportunities to children (e.g. child choice, reinforcing attempts), and to practice skills learned in training in the natural environment (Koegel, Koegel, Vernon, & Brookman-Frazee, 2010). Recently, group-based parent training of PRT was effective for parents to acquire treatment fidelity and increases in child language were noted (Minjarez, Williams, Mercier, & Hardan, 2011). Moreover, other comprehensive, manual-based behavior analytic treatment models, such as the Treatment and Education of Autistic and related Communication Handicapped Children (TEACCH), the Denver Model, the Early Steps Denver Model, Positive Behavior Support (PBS), and DIR/Floortime also incorporate parents within intervention to reduce ASD symptoms.

Singer, Ethridge, and Aldana (2007) analyzed the primary and secondary effects of parent training for children with a number of DDs. Although the array of studies included a broad range of parenting programs for different DD, 4 of the programs specifically addressed an all-ASD population. Additionally each of the 4 programs had different components within treatment. Despite the methodological complexities of the review, Singer et al concluded that incorporating parents in intervention did not lead to increases in parental distress (i.e., depressive symptoms). Although parental distress did not increase with parent training, outcome measures of parent stress did not illustrate significant reductions in response to training. Future research may benefit from identifying components of treatments that may lead to reductions in parent stress within the ASD population. Overall, it is clear that comprehensive and structured interventions improve symptoms of ASD, and that parents are capable and encouraged to

participate in child treatment. However, parental involvement tends to vary in time and content (e.g., child-directed treatment for ASD specific symptoms, parent-directed treatment for strategies to improve overall mental health).

As outlined above, the traditional goal of parent training within the ASD population is to provide parents effective teaching strategies for their children's ASD symptoms. While parents may be learning the specific skills to incorporate formalized teaching to children with ASD, it is unclear whether they are receiving adequate parent training strategies to specifically target child disruptive behavior problems that frequently occur in this population, as well as strategies to decrease heightened levels of parent stress (Brookman-Fraze et al., 2009; Brookman-Fraze, Taylor, & Garland, 2010). Although some traditional ASD parent training methods have assessed parenting stress, the methodology for measuring stress lacks the rigor of studies examining stress in parents of children with disruptive behavior problems. For instance, an oft-cited study analyzing the treatment effects of PRT by Koegel, Bimbela, and Schreibman (1996) recorded levels of stress by an observer-coded interaction between a parent and child. The coded interaction may not necessarily represent a decrease in parent stress levels across time. A current stress level assessed via parent-report is more commonly used in the literature for parents of children with disruptive behavior problems.

The impact of demands on parents of children with ASD, the content parents learn in training, and the outcomes of child disruptive behavior problems and parent stress after parent-training programs remains largely unknown. However, the call for collaboration between parenting programs designed for children with ASD and more standard programs designed for children with elevated disruptive behavior problems (Brookman-Fraze et al., 2006) has led to the development of merged parenting programs designed both for improvements in ASD

symptoms as well as decreases in disruptive behavior. Despite the adaptations and creation of such hybrid programs, the dissemination of such programs within the United States has been relatively sparse (Mazzucchelli, Studman, Whittingham, & Sofronoff, 2010). Additionally, there are still few studies documenting decreases in parenting stress within the parenting role within the ASD population after standard parenting programs for children with disruptive behavior problems have been implemented.

For example the Standard Stepping Stones Triple-P (SSTP; Sanders, Mazzucchelli, & Studman, 2003), an additional component of the Positive Parenting Program (Triple-P; Sanders, Markie-Dadds, & Turner, 2001) for children with disruptive behavior, has been developed to meet the needs of families with children with disabilities including ASDs. Sanders and his colleagues developed a five-tier approach within the SSTP to encompass the varying degrees of needs of families ranging from general parenting information to enhanced behavioral family intervention for families with greater parenting difficulties or concerns with their child's development or behavior. SSTP aims to increase parental self-efficacy, reduce ineffective discipline strategies, improve parental stress and positive coping strategies, improve parental communication in roles of parenting, and develop parents' ability to problem-solve their children's challenging behavior by teaching functional analytic strategies. In addition, SSTP also emphasizes child growth in the areas of communication, adaptive behavior, and educational skills. Acceptability of the program was assessed in families of children with ASD and parental response was positive (Whittingham, Sofronoff, & Sheffield, 2006).

Additionally, an RCT of SSTP assessed 59 families with 2- to 9-year-olds with ASD (Whittingham, Sofronoff, Sheffield, & Sanders, 2009a). Findings suggest that SSTP is a promising intervention for parents of a child with ASD, with improvements in overall child

behavior, parenting management practices, and parent self-efficacy. Moreover, participation in SSTP altered parents' attributions of their children's disruptive behavior (Whittingham, Sofronoff, Sheffield, & Sanders, 2009b). Specifically, after intervention, parents were more likely to believe that their child's behavior can change and the child's behavior was not an intrinsic factor attributable to their diagnosis. This finding suggests that parents without intervention may not intervene during child disruptive behavior problems because the behavior may be perceived as an intrinsic factor of the child's condition instead of a functional response to the environment. The lack of intervention for disruptive behavior problems may lead to a pattern of interaction maintained by avoidance or escape from parental demand. Further, without intervention, parents may overreact to child disruptive behavior out of frustration and may possibly lead to attention-maintained behavior. Moreover, decreases in child disruptive behavior and improvements in parent-self efficacy may lead to better treatment outcomes for children with ASD.

Lastly, parents were satisfied with the program and found it helpful in their parenting role (Whittingham, Sofronoff, Sheffield, & Sanders, 2009c). Interestingly, although the authors noted concern of parents implementing timeout procedures for children with ASD, the majority (75%) of the parents had tried the timeout procedure within the program. The authors indicated that if done properly and for the right behaviors, timeout was effective and helpful for parents. In addition to timeout, parents also found strategies that involved physical guidance and blocking to be helpful. Although Plant and Sanders (2007) found no change in maternal distress (i.e. combination of scores of depression, anxiety, and stress) after SSTP treatment, further studies using the SSTP may benefit from assessing stress in the parenting role to determine whether changes occur throughout training and at follow-up.

Other parent training programs such as the Incredible Years and Parent-Child Interaction Therapy (PCIT) have also been used within the ASD population, however the dissemination of such programs to community settings is largely unknown. In addition, limitations in the existing literature, such as small sample size and nonequivalent measures of parent stress, do not allow for cross comparison of treatment effects and generalizability. However, the behavior analytic strategies utilized in PCIT (Greco, Sorrell, & McNeil, 2001) and previous success for families with children with intellectual disability (Bagner & Eyberg, 2007) seem likely to be well received by those delivering current parent training for reducing ASD symptomatology as the treatment includes several opportunities for positive reinforcement and incidental teaching embedded within parent-child interactions. In conclusion, more research is warranted on the effects of parental stress and ASD symptomatology in response to standard parenting programs primarily designed for children with disruptive behavior problems.

There are additional issues related to the dissemination of parent training within the existing literature. For instance, all of the behavior analytic treatment models designed to improve ASD symptomatology mentioned above have aspects that target child disruptive behavior problems (e.g., functional assessment of problem behavior, selective attention, behavior momentum, behavior specific praise). However the current literature is unclear if the specific intervention strategies to reduce problem behavior are led by a therapist or are taught and implemented by the parent to the extent standard parent programs are utilized for children with disruptive behavior problems. As the prevalence rate for ASD and co-occurring disruptive behavior problems is high, parent psychoeducation and implementation of specialized parenting skills for reduction in disruptive problem behaviors along with specialized skills to improve ASD symptoms is warranted. Treatment outcome studies designed explicitly for ASD

symptomatology often fail to report a reduction in problem behavior while they do report improvements in the core ASD symptom areas. Further clarification is needed to determine whether current behavior analytic programs are reducing child disruptive behavior problems both with a therapist as well as with the caregiver across settings. Supplementary parent training protocols outlining when intervention for disruptive behavior of children with ASD should occur may also add to the existing literature to support parent-implemented treatment for children with ASD. Moreover, research on the effect of treatment on parent stress is warranted to determine whether certain programs may reduce stress in the parenting role. Additionally, tracking the level of child disruptive behavior problems and the effect of parent stress levels may add clarity to the current literature.

### **Summary**

It is evident from reviewing the existing literature on the complexities of parenting a child with ASD that there continues to be a great need for further research in this area. Although there is a growing field examining parenting variables within the ASD population, there is much more to be discovered about the associations between parenting behavior, child behavior, and overall family functioning. The limited literature within the ASD population on associations between parental stress, parenting styles, parent self-efficacy, and child disruptive behavior problems contributes to the difficulty in understanding and establishing key interactions within the parent-child relationship. This information may further develop components of successful parent-training intervention programs for children with ASD and comorbid disruptive problem behaviors. Specifically more research is warranted to understand how parenting skills and parental stress in the parenting role may affect childhood behavior problems.



It has been widely established that parents of children with ASD have elevated levels of parent stress (Blacher & McIntyre, 2006; Dunn et al., 2001; Eisenhower et al., 2005, 2009; Gupta, 2007; Tomanik et al., 2004). Additionally, several studies have reported elevated levels of child disruptive behavior problems resulting in interference of daily living skills and a disrupted parent-child relationship (Gadow, et al., 2005; Lecavalier, 2006; Lecavalier et al., 2006; Tonge & Einfeld, 2003). Although a number of researchers focusing on non-ASD populations have shown a direct link between parenting stress and child behavior problems (Anthony et al., 2005; Blader, 2006), few studies have examined similar questions within an ASD population. For instance, a few studies have shown high levels of parenting stress to be associated with higher levels of child impairment, outcome, and symptomatology (Robbins et al., 1991; Hastings & Johnson, 2001, Osborne, et al., 2008). Additionally, Lecavalier, et al. (2006) reported a bi-directional link between parenting stress and child behavior problems. Also, Osborne and Reed (2010) found that the levels of parenting stress and the parent behaviors of involvement, limit-setting, and communication with the child, interacted across time. Further Osborne and colleagues (2008) analyzed the link between parent stress, parent behavior of limit-setting, and child behavior problems and found that the parent behavior of limit-setting mediated the relationship between parenting stress and subsequent childhood behavior problems. This finding suggests that there may be certain parenting behaviors that may elicit more frequent and perhaps more severe child behavior problems. To my knowledge, no other study has been conducted that replicate this finding. Future research should assess these variables and determine if similar results occur while discussing the implications for parent-training programs for parents of children with ASD and comorbid disruptive behavior problems.

There is a paucity of research that has examined child behavior problems, parenting stress, and parenting behaviors simultaneously within the ASD literature. The current literature is unclear whether many families are receiving behavioral management training specifically for child disruptive behavior problems at the onset of treatment, or if they are, the extent to which it is delivered. The absence of such training may decrease parental ability to handle disruptive behavior and decrease opportunities for their child to learn new tasks in the home. Additionally, the absence of such training could continue an ongoing cycle of reinforcement for child disruptive behavior problems. Parents who have high self-efficacy and practice behavioral management techniques may allow more opportunities for children to acquire skills and lower symptom severity. Therefore, increases in parent self-efficacy may lead to an increase in child skills early in the parent-child relationship, and in turn may later improve child response to interventions and potentially lower parental stress caused by the parenting role. Investigation of the associations between parent stress, parent behavior, and child disruptive behavior problems will assist in understanding the components of treatment that will likely cause the most positive change.

## APPENDIX B

### TABLES

Table 1

*Descriptive Data on Measures with Clinical Cutoff Scores*

	n	Mean	SD	% Clinical Range	Clinical Cutoff
PSI Total	128	83.98	18.70	37%	> 90
PSI Parental Distress	128	33.35	8.99	38%	> 35
ECBI Intensity	128	128.64	37.01	41%	> 131
ECBI Problem	127	12.57	7.95	36%	> 15
GARS-2 Autism Index	113	96.57	18.30	91%	> 69

Note: PSI Total = Parent Stress Index – SF Total, PSI Parental Distress = Parental Distress Subscale from Parent Stress Index – SF. ECBI Intensity = Eyberg Child Behavior Inventory Intensity Subscale, ECBI Problem = Eyberg Child Behavior Inventory Problem Subscale, Autism Index = Gilliam Autism Rating Scale Autism Index

Table 2

*Dimension of Parenting and Child Symptoms within Families*

<i>Variable</i>	<i>PSI Total</i>	<i>PD Subscale</i>	<i>ECBI Intensity</i>	<i>ECBI Problem</i>	<i>Autism Index</i>	<i>PSOC Total</i>	<i>PSOC Efficacy</i>	<i>PS Total</i>	<i>PS Laxness</i>
PSI Total	-								
PD Subscale	.732***	-							
ECBI Intensity	.721***	.438***	-						
ECBI Problem	.668***	.501***	.788***	-					
Autism Index	.516***	.382***	.481***	.324***	-				
PSOC Total	-.639***	-.600***	-.440***	-.531***	-.355***	-			
PSOC Efficacy	-.446***	-.433***	-.275**	-.449***	-.228**	.845***	-		
PS Total	.215**	.197*	.255**	.374***	.105	-.414***	-.366***	-	
PS Laxness	.138	.122	.132	.235**	.205*	-.370***	-.409***	.813***	-
PS Overreact	.260**	.212**	.263**	.385***	.025	-.389***	-.327***	.824***	.476***

Note: PSI Total = Parent Stress Index – SF Total, PD Subscale = Parental Distress Subscale from Parent Stress Index – SF. ECBI Intensity = Eyberg Child Behavior Inventory Intensity Subscale, ECBI Problem = Eyberg Child Behavior Inventory Problem Subscale, Autism Index = Gilliam Autism Rating Scale Autism Index, PSOC Total = Parent Sense of Competency Total, PSOC Efficacy = Parent Sense of Competency Efficacy Subscale, PS Total = Parenting Scale Total, PS Laxness = Parenting Scale Laxness Subscale, PS Overreactivity = Parenting Scale Overreactivity Subscale.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$

Table 3  
 Bootstrap Analyses of Indirect Effects for Mediation Model

Independent variable	Mediator Variable	Dependent variable	SE of mean	95% CI for mean indirect effect
PSI Total	PS Total	ECBI Intensity	.0369	.0038 to .1573*
PD subscale	PS Total	ECBI Intensity	.1157	.0182 to .5012*
PSI Total	Overreactivity subscale	ECBI Intensity	.0428	-.0132 to .1573
PD subscale	Overreactivity subscale	ECBI Intensity	.1345	.0068 to .5683*
PSI Total	PSOC Efficacy	ECBI Intensity	.0785	-.2451 to .0594
PD subscale	PSOC Efficacy	ECBI Intensity	.1997	-.2979 to .5083
PSI Total	PSOC Efficacy	ECBI Problem	.0159	-.0018 to .0614
PD subscale	PSOC Efficacy	ECBI Problem	.0355	.0270 to .1699*

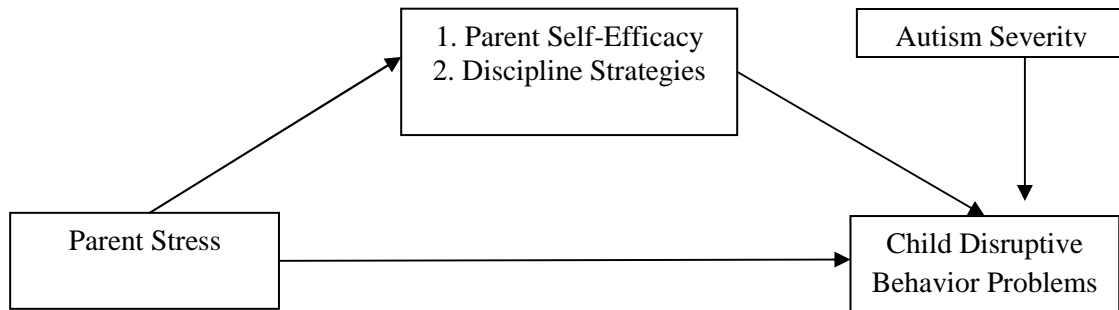
Note: Note: PSI Total = Parent Stress Index – SF Total, PD Subscale = Parental Distress Subscale from Parent Stress Index – SF. ECBI Intensity = Eyberg Child Behavior Inventory Intensity Subscale, ECBI Problem = Eyberg Child Behavior Inventory Problem Subscale, PSOC Efficacy = Parent Sense of Competency Efficacy Subscale, PS Total = Parenting Scale Total, Overreactivity Subscale = Parenting Scale Overreactivity Subscale.

\* $p < .05$

## APPENDIX C

### FIGURES

Figure 1: Parent and Child Mediation Model within Autism Spectrum Disorders





VITA

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Master of Science

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