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Effects of Parents' MBSR on Internalizing Problems in Children: ASD as Moderator

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Effects of Parents' MBSR on Internalizing Problems in Children: ASD as Moderator

by

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A Project submitted in partial satisfaction of
the requirements for the degree
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Each person whose signature appears below certifies that this project in his/her opinion is adequate, in scope and quality, as a project for the degree Doctor of Psychology.

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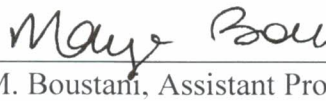

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ABBREVIATIONS

ASD	Autism Spectrum Disorders
MAPS	Mindful Awareness for Parenting Stress
DD	Developmental Delay
TD^-	Typically Developing
MBSR	Mindfulness-Based Stress Reduction
CBT	Cognitive Behavioral Therapy
CBCL	Child Behavior Checklist
BMPS	The Bangor Mindful Parenting Scale
FFMQ	Five Facets of Mindfulness Questionnaire

ABSTRACT OF THE DOCTORAL PROJECT

Effects of MBSR Parent Intervention on Internalizing Problems in Children: ASD as a Moderator by

Hadley McGregor

Doctor of Psychology, Graduate Program in Psychology
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Dr. Cameron L. Neece, Chairperson

Children with autism spectrum disorders (ASD) are at high risk for increased levels of behavior problems and developing internalizing problems. Previous literature has highlighted the impact of parental stress on the development of behavioral problems in children with ASD; however, little research has examined the relation between parenting stress and internalizing problems in children with ASD. The current study utilized data from the Mindful Awareness for Parenting Stress (MAPS) study which consisted of families of 80 preschool children with developmental delays (DD) (N = 31) and children with ASD (N = 49) whose parents reported high levels of stress. Specifically, we investigated whether decreases in parenting stress would lead to reductions in internalizing behavior problems among children with ASD and children with DD , and whether this relation was moderated by the child's ASD status. Additionally, we examined whether individual increases in the mindful facets of acting with awareness and non-judgment, from pre- to post- treatment, would lead to reductions in internalizing problems among children with ASD and children with DD , and whether this relation was moderated by the child's ASD status. We found that children whose parents were assigned to the mindfulness-based stress reduction (MBSR) treatment group, had greater reductions in internalizing problems compared to children whose

parents were assigned to the waitlist-control group, $b = -5.71$, $p < .05$. Furthermore, we found that children of parents who reported greater increases in acting with awareness post-treatment had a greater reduction in internalizing problems, $b = -2.57$, $p < .05$. We also found that, children whose parents had greater increases in non-judgment post-treatment had a greater reduction in internalizing problems, $b = -1.85$, $p < .05$. However, ASD status was not a significant moderator in either analysis, *ps* $> .05$.

CHAPTER ONE

INTRODUCTION

Research has shown that children and adolescents with autism spectrum disorders (ASD) are at high risk for developing comorbid internalizing problems and disorders (de Ruiter, Dekker, Verhulst, and Koot, 2007; Mayes, Calhoun, Murray, Ahuja, & Smith, 2011; Matson, Hess, and Boisjoli, 2010). In fact, studies highlighting the prevalence of internalizing problems in children and adolescents with ASD showed that roughly 39.6% to 70% of children and adolescents with ASD had at least one anxiety disorder (Simonoff et. al, 2008; van Steensel, Bögels, & Perrin, 2011) and roughly 11% to 30% exhibit clinical levels of symptoms of depression (Leyfer et. al, 2006; Rosenberg, Kaufmann, Law, & Law, 2011; Strang et. al, 2012). Conversely, about 7.1% to 12% of typically developing (TD) children and adolescents exhibited anxiety problems (Costello, Egger, & Angold, 2005) and only about 3.2% displayed symptoms of depression (Ghandour et. al, 2019). This discrepancy between comorbid rates of internalizing problems in TD children and adolescents compared to those with ASD, has made it clinically difficult to parse out an internalizing problem from a feature of ASD (Vasa & Mazurek, 2015). Regardless of whether or not anxiety is a feature of ASD or a stand-alone diagnosis, it is important to address internalizing problems in young children early on to improve later life outcomes.

Parenting stress has been shown to strongly predict the development of behavior problems such as acting out or emotional dysregulation, as well as future psychopathology (i.e., Major Depressive Disorder, Generalized Anxiety Disorder) among young children with ASD and other developmental disabilities (Baker, Neece, et al., 2010; deRuiter, Dekker, Verhulst, Koot, 2007). Although parenting stress is an important

predictor of child outcomes, it is seldom addressed in interventions targeting internalizing problems among young children, who are TD or those with ASD who are at a higher risk for developing comorbid internalizing problems. In the current study, we examined whether a Mindfulness-Based Stress Reduction (MBSR) intervention for parents could improve internalizing problems in children with ASD.

Internalizing Problems and Implications

Internalizing problems typically include symptoms of depressive disorders, anxiety disorders, somatic complaints, reticence, fearfulness, oversensitivity, withdrawal, and in some instances, suicidal ideation, which all reflect a child's internal emotional or psychological state (Davis, Young, Hardman, and Winters, 2011; Liu, Chen, & Bse, 2011). These problems are also associated with numerous unfavorable long-term outcomes such as educational problems (difficulty in school or school-drop out), entanglements with the welfare and justice systems, teenage suicide, and higher likelihood of developing an anxiety, depressive or externalizing disorder (noncompliance, verbal and physical aggression, disruptive acts, emotional outbursts) (Liu, Chen, & Bse, 2011). Additionally, research has shown that children who have increased internalizing symptoms, such as anxiety, are also at a risk for cognitive impairment, including lower intellectual functioning, difficulty concentrating, and trouble staying focused (Davis, et al., 2010; Hodges & Plow, 1990). Furthermore, it has been found that children and adolescents who exhibit internalizing problems are at a greater likelihood for subsequently developing psychiatric disorders such as substance use disorders, somatoform disorders, or personality disorders (Birmaher et al., 1996; Essau, Conradt, &

Petermann, 2002; Kasen et al., 2001; Woodward & Fergusson, 2001). Internalizing problems have also been linked to long-term reduced life satisfaction, marital dissatisfaction, and low self-esteem (Gotlib, Lewinsohn, & Seeley, 1998; Hughes & Gullone, 2008). However, unlike externalizing behavior problems such as aggression or hyperactivity, which are often seen in childhood and can be very apparent to family members and teachers, internalizing problems often go undetected leading to reduced rates of seeking behavioral interventions (Tandon, Cardeli, & Luby, 2009). Therefore, it is important to proactively identify internalizing problems in children and associated risk factors in order to provide a more effective treatment method.

Comorbidity of Internalizing Problems and ASD

Children with ASD are at an increased risk of developing comorbid internalizing problems (Bitsika, Sharpley, Andronicos, & Agnew, 2016; Emerson, 2003), which can be detrimental to a child's physical health, performance in school, psychological adjustment, and employment opportunities later in life (Merrell, 2008; Merrell & Walker, 2004). Research has also shown that children with ASD exhibit internalizing problems more frequently than children with DD (Davis, et al., 2010) and TD children (Evans, Canavera, Kleinpeter, Maccubbin, & Taga, 2005; Gotham, Brunwasser, & Lord, 2015). In a study comparing internalizing problems between toddlers who were typically developing, those with PDD-NOS, and those with ASD, the toddlers with ASD exhibited the most severe internalizing problems such as anxious and avoidant symptoms (Davis, et al., 2010). Furthermore, children with ASD who had co-occurring internalizing disorders such as anxiety disorders were significantly more likely to engage in self-injurious behaviors and

display depressive symptoms, when compared to children with ASD without comorbid internalizing problems (Kerns, et al., 2015). Additionally, although some studies suggest that children with ASD exhibit similar presentations of internalizing problems to those of TD children, such as being anxious, depressed, withdrawn, or having somatic complaints (Mayes, Calhoun, Murray, Ahuja, & Smith, 2011; Matson, Hess, & Boisjoli, 2010), it has been found that children with ASD tend to display overall higher rates and more intense symptomology of internalizing problems (Park, Kim, Koh, Song, & Leventhal, 2014). For instance, research has shown that children with ASD tend to exhibit higher rates of specific phobias, even after accounting for overlapping features with ASD symptomology, when compared to other children with DD as well as TD children (Evans, Canavera, Kleinpeter, Maccubbin, & Taga, 2005). Although research on the differences in manifestation of internalizing problems in children with ASD is scarce, there does appear to be some variation in expression (e.g. intensity or symptomology) when compared to other children with DD or TD children.

Researchers have also found that, in individuals diagnosed with ASD, the pattern of internalizing problems such as anxiety, can wax and wane across the lifespan (Davis, et al., 2011). For instance, untreated anxiety seems to rise from toddlerhood to childhood, then decrease from childhood to young adulthood, but increase again from young adulthood into older adulthood (Davis, et al., 2011). Studies have also shown that, if left unidentified and untreated, internalizing problems, such as anxiety may continue throughout the lifespan, and may also become more severe (Davis, Ollendick, & Nebel-Schwalm, 2008; Kendall, 1994; Spence, Rapee, McDonald, & Ingram, 2001). These findings highlight that behaviors can be pervasive and lifelong if untreated.

Family Factors

Internalizing problems in individuals with ASD are often related to family dynamics or parental characteristics. For instance, one study found that the presence of maternal criticism predicted increased trajectories of symptoms of withdrawal as well as overall internalizing symptoms in individuals with ASD (Woodman, Mailick, & Greenberg, 2016). Furthermore, researchers have found that parents who displayed harsh or disengaged parenting, such as poor monitoring or supervision and inconsistent discipline, also predicted increased levels of internalizing problems in both children with ASD (McRae, Stoppelbein, O'Kelley, Fite, & Greening, 2018) and TD children (Melis, Yavuz, Selcuk, Corapci, & Aksan, 2017; Sher-Censor, Shulman, & Cohen, 2018). Conversely, research on parents of TD preschoolers shows that positive parenting with features such as being responsive, warm, and involved is associated with more positive child outcomes such as emotion regulation (Feldman & Klein, 2003). Although the research is scarce in regard to positive parenting and childhood internalizing problems in children with ASD, the findings in regard to TD children highlight the important role that parents' behavior and parenting characteristics can play with regard to a child's expression of internalizing problems. Furthermore, given that children with ASD are more vulnerable to developing comorbid internalizing problems (de Ruiter, Dekker, Verhulst, and Koot, 2007; Mayes, Calhoun, Murray, Ahuja, & Smith, 2011; Matson, Hess, and Boisjoli, 2010), positive parenting may have an even greater impact on potential positive outcomes.

In addition to parental characteristics, previous research also has linked parenting stress with childhood internalizing problems. For instance, parents of children with

developmental disabilities tend to have higher levels of parenting stress when compared to parents of children who are TD (Craig, et al., 2016; Woodman, Mawdsley, & Hauser-Cram, 2015). For instance, in a study looking at parents of children with ASD compared to parents of TD children, researchers found that parents of children with ASD reported having lower subjective well-being and increased psychological stress (Costa, Steffgen, & Ferring, 2017). Additionally, parental stress has also been associated with the development of internalizing problems and mental disorders among children with DD (Baker, Blacher, Crnic, & Edelbrock 2002; Baker, Neece, Fenning, Crnic, & Blacher, 2010; de Ruiter, Dekker, Verhulst, & Koot, 2007; Rodriguez, 2011). Furthermore, researchers have linked parenting stress to internalizing problems in children. In one such study, Bauminger, Solomon, and Rogers (2010) compared levels of maternal stress and child psychopathology in parents of 77 children with and without ASD. The researchers found that maternal stress, as assessed by the parenting stress index (PSI), significantly contributed to the prediction of internalizing problems with higher rates among the children with ASD. Research also suggests that the relation between behavior problems and parenting stress is bidirectional. Behavior problems, such as acting out and emotional dysregulation, can lead to increases in parenting stress over time and high parenting stress leads to increases in behavior problems in individuals with DD (Baker et al., 2003**;** Neece, Green, & Baker, 2012; Orsmond, Seltzer, Krauss, & Hong, 2003). Researchers also have found that, among children with DD , increases in parenting stress in early childhood are associated with poorer social skills later on during development (Neece & Baker, 2008) and higher levels of behavior problems over time (Neece, et al., 2012). These studies suggest that parental stress has a profound impact on behavior problems,

and therefore emphasize the need for interventions that target the relation between parenting stress and internalizing problems comorbid in children with DD , including ASD.

Treatment

Traditionally, treatment for child internalizing disorders, such as anxiety disorders or depression, have relied on the use of pharmacotherapy or cognitive behavioral therapy (CBT), which is a short-term, present-oriented psychotherapy that is directed toward solving problems of the present and modifying and dysfunctional thinking and behavior (Beck, 2011). However, in terms of the generalizability of these treatments to young children with ASD, the research is scarce. Recent findings of studies on the use of pharmacotherapy with children and adolescents with ASD and comorbid internalizing problems have proven to either be inconclusive (Storch, 2015) or not recommended (Ji & Findling, 2015; Reiersen & Handen, 2011). CBT, however, has had much more consistent and favorable results. The three areas addressed by CBT include identifying emotions and accompanying physiological symptoms, cognitive distortions, and dysfunctional behaviors which have typically been shown to be very effective with children with internalizing problems (Chorpita & Daleidan 2009; Davis & Ollendick 2005; Kendall & Hedtke, 2006). For example, in a randomized clinical trial with children ages four to seven years old with internalizing disorders, children who participated in CBT showed greater reductions in anxious behaviors when compared to a wait-list control group (Hirshfeld-Becker, 2010). Additionally, in another study researchers looked at how adding a family component to CBT would affect internalizing problems and found

that children and adolescent's internalizing problems decreased when they participated in family-oriented CBT (Bogels & Siqueland, 2006). These findings are common among studies focusing on CBT with children with internalizing disorders such as anxiety and depression (Higa-McMillan, Francis, Rith-Najarian, & Chorpita, 2016; Ishikawa, Okajima, Matsuoka, & Sakano, 2007; Kendall, et al., 1997; Manassis, et al., 2010).

Despite the numerous studies highlighting the efficacious nature of CBT for internalizing problems and disorders in childhood, most have been conducted with typically developing, limiting their generalizability to children with ASD. Although some studies have demonstrated the effectiveness of CBT for children with ASD, they usually include higher functioning individuals capable of processing abstract thoughts and children ages six to seventeen (Burkhart, Knox, & Hunter, 2017; Keehn et al. 2013; Reaven, et al., 2009; Storch et al. 2013; Sze & Wood, 2007; Sukhodolsky, Bloch, Panza, & Reichow, 2013). Despite high rates of comorbid internalizing problems and ASD, there are no interventions that target this problem for children below the age of six with lower cognitive functions. Additionally, the treatments that do exist for children with ASD and comorbid internalizing problems and disorders tend to focus primarily on treating the individual without addressing family components. Yet, internalizing problems are significantly associated with family environments and parental characteristics (Galambos, Baker, & Almeida, 2003; Leve, Kim, & Pears, 2005; Marchand, Hock, & Widaman, 2002). Therefore, it would be beneficial to include familial and parenting considerations when developing interventions for children with internalizing disorders and ASD.

Mindfulness Based Stress Reduction (MBSR)

Mindfulness-based stress reduction (MBSR) is a manualized intervention that teaches mindfulness meditation practice to reduce physiological and psychological symptoms of anxiety and panic (Kabat-Zinn, et al., 1992). Research has shown that parents and caregivers of children with ASD or DD who participated in mindfulness interventions reported less parenting stress (Bazzano, et al., 2015; Beer, Ward, & Moar, 2013; Neece, 2014; Singh et al., 2015), as well as reductions in anxiety (Benn, Akiva, Arel, & Roeser, 2012) and depression (Dykens, et al., 2014). Additionally, parents of children with ASD, as well as parents of children with DD who participated in general MBSR practices saw decreases in externalizing problems such aggression, self-injury, noncompliance (Singh, et al., 2006) and an increase in social behavior in their children (Singh, et al., 2007). Furthermore, TD children and adolescents whose parents participated in mindfulness practices reported reduction in internalizing problems such as symptoms of anxiety and depression (Geurtzen, Scholte, Engels, Tak, and van Zundert, 2014; Parent, McKee, Rough, and Forehand, 2015). However, despite the relation between parenting stress and internalizing problems in TD children, the research on interventions that incorporate MSBR for parenting stress as a means to reduce internalizing problems in children with ASD is scarce.

Acting with Awareness and Non-Judgment Facets of Mindfulness

Within the framework of MBSR there are five underlying constructs of mindfulness used to assess for the general propensity to be mindful in everyday life (Baer, Smith, Hopkins, Krietemeyer & Toney, 2006). These five facets include: non-

judgment (taking a non-evaluative stance in regard to the inner experience), acting with awareness (purposefully attending to moment-to-moment behaviors), observing (noticing experiences), describing (labeling experiences with words), and non-reactivity (in regard to the inner experience) (Baer, Smith, Hopkins, Krietemeyer & Toney, 2006). Research has shown that engaging in MBSR is associated with an increase in levels of acting with awareness, non-judgment, non-reactivity, observing, and describing (Carmody & Baer, 2008), which have all been shown to be indirectly related to reductions in TD children's internalizing problems through methods of mindful parenting (Han, et. al, 2019). Although, facets such as non-reactivity, describing, and observing have not been consistently linked to reductions in stress or internalizing problems (Brown, Bravo, Roos, & Pearson, 2015; Bullis, Bøe, Asnaani, & Hofmann, 2014; Desrosiers, Klemanski, & Nolen-Hoeksema, 2013), facets such as acting with awareness and non-judgment have been shown to be key components for distress tolerance, as well as for reductions in internalizing problems such as anxiety and depression (Brown, Bravo, Roos, & Pearson, 2015). However, few studies have investigated the relation between these individual facets and parenting stress, in parents of TD children or those with ASD.

Although research on the relation between parents' levels of acting with awareness and how they relate to child outcomes is scarce, some studies have highlighted a relation between this facet and reductions in internalizing problems such as anxiety (Bullis, Bøe, Asnaani, & Hofmann, 2014; Mizera, Bolin, Nugent, & Strand, 2016) and depression (Cash & Whittingham, 2010) across various age groups. For instance, when an individual engages in higher levels of acting with awareness, the individual is attending to the present moment activity, as opposed to being on "autopilot," or focusing

attention elsewhere while behaving automatically (Gu et al., 2016). This sense of awareness allows individuals to be more mindful of their surroundings and their behaviors in those surroundings. Parents who act with more awareness of both their children's emotions, as well as their own emotions, are more responsive to their child's needs and less dismissing of their child's emotions (Duncan, Coatsworth, & Greenberg, 2009). Additionally, children whose parents display more awareness of their child's needs and take the time to reassure their children tend to report lower levels of internalizing problems (van der Sluis, van Steensel, & Bögels, 2015). Furthermore, with regard to parents of TD children and adolescents, non-judgment has been shown to be related to reductions in internalizing problems such as anxiety and depression in children and adolescents (Parent, McKee, Rough, and Forehand, 2015). However, despite these findings, research that specifically investigates the relationship of increase in parental acting with awareness or non-judgment and internalizing problems in children with ASD, is limited.

Aims and Hypotheses

The proposed study aimed to examine whether parents' use of MBSR leads to reduction in internalizing problems for children with DD. Additionally, we investigated child's ASD status as a moderator of the relation between MBSR and internalizing problems. The following questions were examined:

1a. Does parent participation in an MBSR intervention predict in internalizing problems post-treatment? We hypothesized that children of parents who participated in an MBSR intervention would show greater reductions in internalizing problems post-

treatment when compared to children of parents who were enrolled in the waitlist control group (Figure 1).

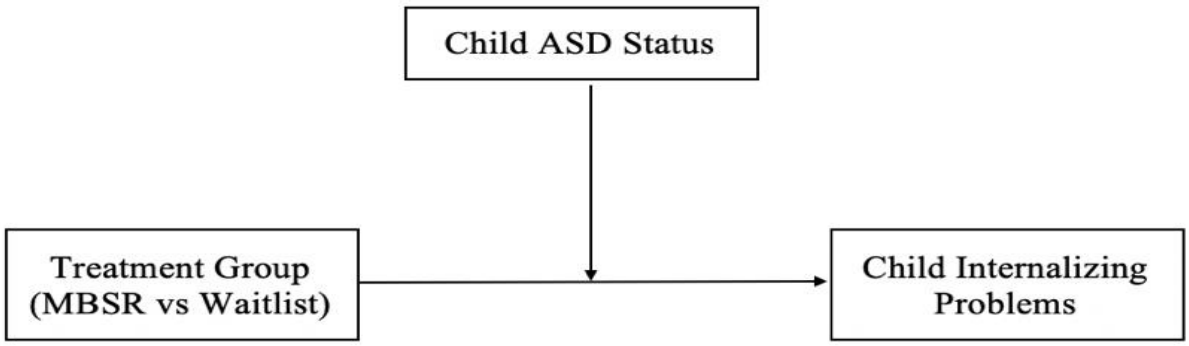

Figure 1. Theoretical model of pathway predicting child internalizing problems through the effects of parents' participation in MBSR as moderated by child's ASD status.

1b. Is the relation between MBSR participation and childhood internalizing problems moderated by child ASD status? We hypothesize that parents in the MBSR group who have children with ASD will show the greatest reductions in child internalizing problems, compared to parents in the waitlist control group (Figure 1).

2a. Within the MBSR group, does parent mindful acting with awareness predict child internalizing problems post-treatment? We hypothesized that children whose parents demonstrate a greater increase of mindful acting with awareness will have greater reductions in internalizing problems post-treatment (Figure 2).

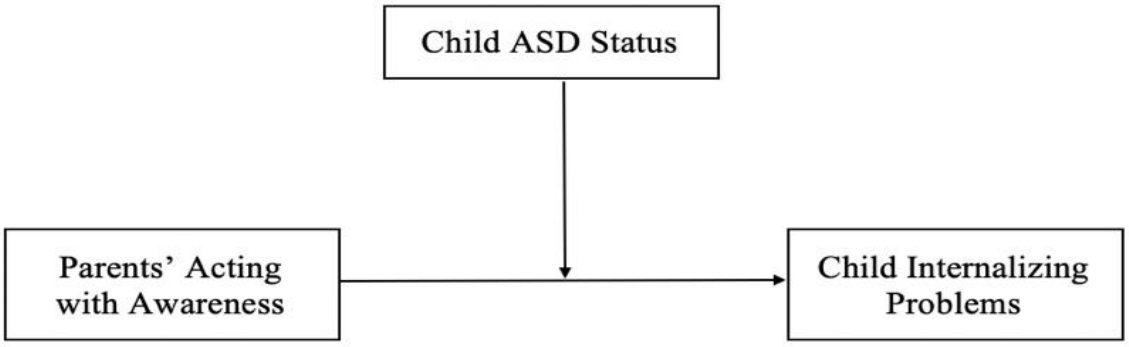

Figure 2. Theoretical model of pathway predicting child internalizing problems through the effects of changes in parents' mindful acting with awareness as moderated by child's ASD status.

2b. Within the MBSR group, is this relation between mindful acting with awareness and child internalizing problems post-treatment moderated by child ASD status? We hypothesized that children with ASD whose parents have greater increases of mindful acting with awareness have greater reductions in internalizing problems post-treatment (Figure 2).

3a. Within the MBSR group, does parent mindful non-judgment predict child internalizing problems post-treatment? We hypothesized that children whose parents demonstrate a greater increase of mindful non-judgment will have greater reductions in internalizing problems (Figure 3).

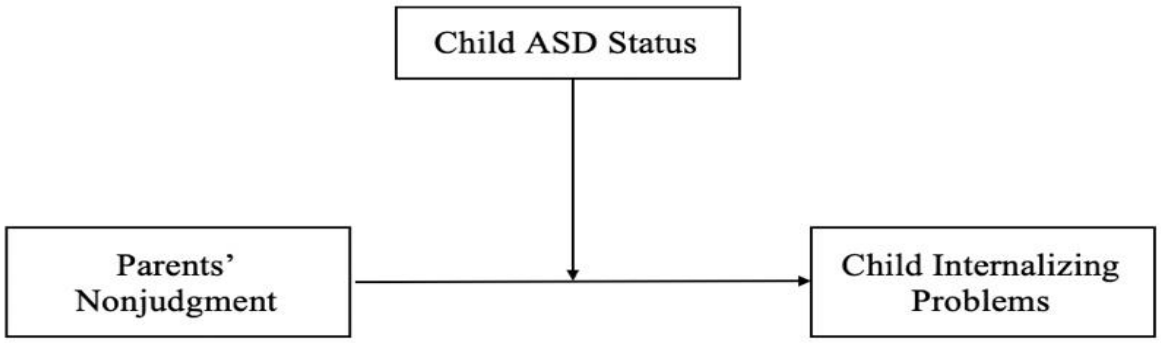

Figure 3. Theoretical model of pathway predicting child internalizing problems through the effects of changes in parents' mindful non-judgment as moderated by child's ASD status.

3b. Within the MBSR group, is the relation between mindful non-judgment and child internalizing problems moderated by child ASD status? We hypothesized children with ASD whose parents who engage in greater levels of non-judgment will have greater reductions in internalizing problems (Figure 3).

CHAPTER TWO

MATERIALS AND METHODS

Participants

This study used data from the Mindful Awareness for Parenting Stress (MAPS) Project. We recruited 80 children with DD and children with ASD and their parent(s) to participate in this study. Our sample includes parents who are individuals of all genders, from a wide range of socioeconomic statuses, and age ranges. All parents, regardless of marital status (single, married, in a relationship) were invited to participate (Table 1). In two-parent households, both parents were invited; however, the parent that spends the most time with the child was deemed the primary care giver and was responsible for completing all measures and attending all sessions involved in the intervention. Participants were primarily recruited through the Inland Regional Center (IRC), a government agency that provides services for all individuals with developmental disabilities. Families who meet the study criteria were identified from the Regional Center's computerized databases and screened by agency staff. The Regional Center staff will then mail prospective families brochures detailing the nature of study.

Table 1. Characteristics of Participants and Means and Standard Deviations of Measured Variables

N = 80	*n (%)*	*M (SD)*
Child characteristics		
Gender		
Male	57 (71.25)	
Female	23 (28.25)	
Ethnicity		
Latino	38 (47.50)	
Caucasian	20 (25.00)	
Other	17 (21.25)	
Asian	3 (3.75)	
African American	2 (2.50)	
Diagnosis		
ASD	49 (61.25)	
Developmental Delay	31 (38.75)	
Age		4.18 (1.01)
Parent Characteristics		
Age		37.21 (7.22)
Grade in School		14.43 (2.89)
% Mom	77 (96.30)	
Marital Status		
Married	60 (75.00)	
Not Married	20 (25.00)	
Family Income		
<$50,000	43 (53.75)	
>$50,000	37 (46.25)	

All individuals invited to participate in the study were parents of children with DD or ASD and significant behavior problems such as hitting and excessive tantrums. Criteria for study entry were: (1) Having a child ages 3 to 5 years old, (2) child had been previously determined to have a developmental delay prior to the intervention, (3) parent(s) reported that their child exhibits more than ten behavior problems (this is the

recommended cutoff score for screening children for treatment of behavioral problems) on the Eyberg Child Behavior Inventory (ECBI; Robinson, Eyberg, & Ross, 1980), (4) the primary caregiver was not participated any form of psychological or behavioral treatment at the time of referral (e.g. counseling, parent training, parent support group, mindfulness group etc.) and did not display any severe psychopathology, (5) the primary caregiver agreed to participate in the intervention (this requirement was determined based on whether the parent(s) signed the consent form), and (6) parent(s) had to speak and understand English. Parents were ineligible if their children had debilitating physical disabilities or visual or auditory impairments that prevented them from participating in the assessment tasks described in the protocol (e.g. child is not ambulatory, deaf, or blind).

Procedure

Interested parents were able to contact the study personnel by phone, return a postcard requesting the principle investigator to contact them, or submit their information on the study's website (www.mapsproject.org). If the family indicated interest in participation the research staff conducted a phone screen to assess for eligibility, and, if the family met eligibility for the study, an appointment was scheduled for the initial laboratory assessment at Loma Linda University. Primary caregivers were then mailed a packet of questionnaires including information of demographics, services, and their child's level of internalizing problems, that they completed prior to coming to being randomly assigned to the immediate treatment group or waitlist control group.

Parents assigned to the immediate treatment group received an intervention that

follows the MBSR manual outlined by Kabat-Zinn et al., 1992. The intervention contained three main features: (1) didactics that demonstrate the concept of mindfulness, the psychology and physiology of stress and anxiety, and every day instances in which mindfulness can be used as a more adaptive response to stress, (2) exercises focused on mindfulness during the group meetings and as homework between sessions, and (3) discussion and sharing in small and large groups. The MBSR program includes eight weekly 2-hour sessions, a day-long meditation retreat after class 6 of 8, and daily home practice based on audio discs with instruction. The mindfulness exercises included the body scan, sitting meditation with awareness of breath, and mindful movement. The intervention was delivered by a certified MBSR and doctoral students provided childcare during the group and the daylong retreat in order to provide support for families who were unable to find other means of childcare.

Following the completion of the immediate treatment group, the families were asked to return to the lab to complete a post-treatment assessment and six-month follow up assessment. Families were compensated for the assessments receiving $10 (pre-intervention assessment), $15 (post-intervention assessment), and $50 (follow-up assessment), resulting in total payments of $75 for these visits. Families in the waitlist-control group were required to complete the baseline pre-intervention assessment at the same time as families in the immediate intervention group, as well as a second pre-intervention assessment immediately before engaging in the intervention. received an additional $10 for completing a fourth assessment.

Measures

Demographic data

Demographic data were collected during an interview with the participating parent. Demographic variables include gender, age, race of both the primary caregiver and the child, as well whether or not the child has been diagnosed with ASD (See Table 1).

Child Behavior Checklist for Ages 1 ½ - 5 (CBCL)

Prior to the initial assessment, parents completed the CBCL 1 ½ to 5 (Achenbach, 2000) to assess for child behavior problems. The CBCL contains 99 items that are scored as "not true" (0), "somewhat or sometimes true" (1), or "very true or often true" (2). Each item represents a problem behavior, such as "acts too young for age" and "cries a lot." For the current study, we used the Internalizing Scale which includes the subscales of Emotionally Reactive, Anxious/Depressed, Somatic Complaints, and Withdrawn. Examples of these questions include: your child is disturbed by any change in routine, clings to adults or too dependent, and can't stand having things out of place.

The Bangor Mindful Parenting Scale (BMPS)

The BMPS (Jones, Hastings, Totsika, Keane, and Rhule, 2014) is a 15-item questionnaire used to measure mindfulness explicitly in how parents interact with their children. The BMPS is based on the Five Facets of Mindfulness Questionnaire (FFMQ), with three items representing each of the five underlying constructs encompassing

mindfulness identified by Baer et al (2006). This measure will be used to assess parents' mastery of mindfulness skills over the course of the intervention and will be completed at the first session, fifth session, and last session, specifically, the skills of acting with awareness, being non-reactive, and non-judgment.

Data Analytic Plan

Prior to testing our hierarchical linear regression, demographic variables were correlated with both the independent variables and dependent variable. The demographic variables analyzed can be found in Table 1. No demographic variables were significantly correlated with both the independent variables and the dependent variables; thus, no demographic covariates were included in the models. Descriptives for other key variables can be found in Table 2.

Table 2. Means and Standard Deviations for Key Variables at Baseline and Post treatment

Variable	Baseline	Post-Treatment
	M (SD)	*M (SD)*
Internalizing T-Scores	65.73 (7.27)	63.59 (8.54)
Mindfulness Facets		
MPS Acting with Awareness	5.78 (1.99)	6.45 (1.71)
MPS Non-judgment	4.25 (1.95)	5.73 (1.72)

Prior to running our main analyses, we tested for outliers, multicollinearity using VIF and Tolerance values, and checked the assumptions of regression. A multiple linear regression was run and DFBetas, Leverage, and Studentized Deleted Residuals were

obtained to test for the leverage, discrepancy, and the influence of outliers. Multicollinearity was considered a concern if VIF values were greater than 10 and Tolerance values were less than .1. Multicollinearity concerns were present within our Aim 2 and Aim 3 analyses. VIF and Tolerance scores for the following analyses were outside of the aforementioned ranges: parents' baseline acting with awareness scores and child's ASD status and parents' baseline non-judgment scores and child's ASD status. To address multicollinearity, we centered parents' baseline acting with awareness scores and parents' baseline non-judgment scores to the mean, which corrected the VIF and Tolerance scores. Additionally, we considered cases to be outliers if values for DFBetas, Leverage and Studentized Deleted Residuals were all outside the following ranges: DFBetas ± 1, Leverage < .48, and Studentized Deleted Residuals ± 2.06 (Cohen, Cohen, West, & Aiken, 2003). We found two outliers present in our Aim 1 analysis. However, removing the two outliers did not significantly affect the results, due to low power and concern for Type 1 error. Additionally, a significant outlier was found within our Aim 3 analysis, which did inflate our findings, and therefore was removed. Our data did not violate any of the assumptions of regression.

Aim 1

We used a hierarchical linear regression analysis to examine whether parents' participation in the MBSR intervention predicted changes in internalizing problems in children with ASD and other DD post-treatment. We first evaluated the assumptions of linear regression. Then, baseline CBCL Internalizing T-scores were entered in the first step of the regression, followed by treatment group status entered in the second step of

the regression. Child's diagnosis was entered into the third step of the regression, and the interaction between treatment group and child's diagnosis was entered into the final step. By controlling for pre-treatment levels of each variable, we were able to examine how parents' use of MSBR is related to their children's internalizing problems.

Aim 2

In order to further investigate the specific mechanisms within MBSR that may impact child internalizing problems, we used a hierarchical linear regression analysis to examine whether changes in parents' mindful acting with awareness would predict changes in internalizing problems in children with ASD and other DD . We first evaluated the assumptions of linear regression using SPSS version 25. Then, baseline CBCL Internalizing T-scores and parents' baseline Acting with Awareness scores from the BMPS were entered in the first step of the regression, followed by ASD diagnosis in the second step of the regression. Parents' post-treatment Acting with Awareness scores were entered into the third step and the interaction between ASD diagnosis and Parents' post-treatment Acting with Awareness scores were entered into the final step of the regression. By controlling for pre-treatment levels of each variable, we were able to examine how parents' increases in acting with awareness were related to their children's internalizing problems.

Aim 3

In order to further investigate the specific mechanisms within MBSR that may impact child internalizing problems, we used a hierarchical linear regression analysis to

examine whether changes in parents' mindful non-judgment would predict changes in internalizing problems in children with ASD. We first evaluated the assumptions of linear regression using SPSS version 25. Then, baseline CBCL Internalizing T scores and parents' baseline Non-Judgment scores from the BM were entered in the first step of the regression, followed by ASD diagnosis in the second step of the regression. Parents' post-treatment Non-Judgment scores were entered into the third step and the interaction between ASD diagnosis and Parents' post-treatment Non-Judgment scores were entered into the final step of the regression. By controlling for pre-treatment levels of each variable, we were able to examine how parents' increases in non-judgment are related to their children's internalizing problems.

CHAPTER THREE

RESULTS

Aim 1

A hierarchical multiple linear regression was used to examine the effects of parents' participation in an MBSR intervention on levels of internalizing problems in children with ASD and children with DD . Overall, parents' participation in an MBSR intervention accounted for a significant proportion of variance in levels of internalizing problems for both children with ASD as well as children with other DD , $F(4, 62) = -5.71$, $p < .05$ (Table 3). The optimal linear combination of treatment group and child's ASD status accounted for approximately 51.70% of the variance in levels of internalizing problems in children with ASD ($R^2_{adj} = .52$). Parents' participation in an MBSR intervention significantly predicted levels of internalizing problems in children with ASD. Specifically, parents in the MBSR group reported scores 5.71 points lower on average on CBCL report measures of children's internalizing problems in comparison to parents in the waitlist-control group ($b = -5.71$, 95% CI [-10.55, -.87], $p < .05$). Child's diagnosis did not significantly predict levels of internalizing problems, $p > .05$. There was not a significant interaction effect between parents' participation in an MBSR intervention and the child's diagnosis on child's internalizing problems, $p > .05$.

Table 3. Results of a Hierarchical Linear Regression Analysis with Treatment Group Predicting Child Internalizing Problems Post-Treatment

	b	β	*t*	*p*	95% CI (*b*)	R^2_{adj}	pr^2	sr^2
Step 1						.48		
Baseline Int	.83	.70	7.82	.00	[.62, 1.04]		.48	.48
Step 2						.51		
Baseline Int	.85	.71	8.20	.00	[.64, 1.05]		.51	.50
Tx Group	-3.28	-.19	-2.21	.03	[-6.24,-.32]		.07	.04
Step 3						.51		
Baseline Int	.83	.70	8.00	.00	[.62, 1.03]		.50	.47
Tx Group	-3.33	-.20	-2.26	.03	[-6.27, -.39]		.06	.04
ASD Status	2.10	.12	1.37	.17	[-.96, 5.153]		.03	.01
Step 4						.52		
Baseline Int	.80	.67	7.61	.00	[.59, 1.01]		.48	.42
Tx Group	-5.71	-.33	-2.36	.02	[-10.55, -.87]		.08	.04
ASD Status	.42	.02	.21	.84	[-3.66, 4.50]		.00	.00
TXxASD	3.82	.21	1.23	.22	[-2.36, 10.01]		.02	.01

Note. Parents' baseline report of their child's internalizing problems is represented by Baseline Int; Treatment group (waitlist control vs immediate MBSR) is represented by Tx group; the interaction between the enrollment in MBSR treatment group and the child's ASD diagnosis is represented by TXxASD.

Aim 2

A hierarchical multiple linear regression was used to examine the effects of changes in parents' mindful acting with awareness on internalizing problems in children with ASD. Overall, changes in parents' mindful acting with awareness accounted for a significant proportion of variance in levels of internalizing problems in children with ASD and children with other DD $F(5, 15) = -2.57$, $p < .05$ (Table 4). The optimal linear combination of changes in parents' mindful acting with awareness and their child's diagnosis accounted for approximately 61.20% of the variance in levels of internalizing problems in children with ASD ($R^2_{adj} = .61$). Changes in parents' mindful acting with awareness significantly predicted levels of internalizing problems in children with ASD. Specifically, as parent's mindful acting with awareness increased by 1 point, children's internalizing problems decreased by 2.57-points at the mean of changes in parents' mindful acting with awareness levels and holding all other predictors that are not involved in the interaction constant ($b = -2.57$, 95% CI [-4.49, -.65], $p < .05$). Additionally, child's ASD status did significantly predict levels of internalizing problems $F(5, 15) = 9.35$, $p < .05$ (Table 3). Such that, the mean level of internalizing problems for children with ASD were 9.35 points higher than the mean level of internalizing problems for children without ASD. There was not a significant interaction effect between changes in parents' mindful acting with awareness and the child's diagnosis on child internalizing problems, $p > .05$.

Table 4. Results of a Hierarchical Linear Regression Analysis Changes in Parents' Mindful Acting with Awareness Predicting Internalizing Problems Post-Treatment

	b	β	*t*	*p*	95% CI (*b*)	R^2_{adj}	pr^2	sr^2
Step 1						.40		
Baseline Int	.96	.72	3.92	.00	[.45, 1.48]		.46	.46
Baseline AA	.94	.17	.92	.37	[-1.21, 3.08]		.04	.02
Step 2						.48		
Baseline Int	.84	.63	3.46	.00	[.33, 1.35]		.41	.32
Baseline AA	.33	.06	.32	.75	[-1.83, 2.49]		.01	.00
ASD Status	6.68	.31	1.77	.09	[-1.34, 15.28]		.16	.08
Step 3						.62		
Baseline Int	1.00	.75	4.74	.00	[.55, 1.45]		.58	.42
Baseline AA	.91	.16	1.03	.32	[-.96, 2.76]		.06	.02
ASD Status	10.14	.45	2.91	.01	[2.76, 17.53]		.35	.16
Post-Tx AA	-2.51	-.45	-2.86	.01	[-4.38, -.65]		.34	.15
Step 4						.61		
Baseline Int	1.01	.75	4.68	.00	[.55, 1.47]		.59	.43
Baseline AA	2.08	.38	1.04	.31	[-2.18, 6.35]		.06	.02
ASD Status	9.35	.42	2.50	.03	[1.37, 17.33]		.29	.12
Post-Tx AA	-2.57	-.46	-2.86	.01	[-4.49, -.65]		.35	.16
AAxASD	-1.40	-.22	-.66	.52	[-5.93, 3.13]		.03	.01

Note. Parents' baseline report of their child's internalizing problems is represented by Baseline Int; parents' baseline levels of acting with awareness is represented by Baseline AA; child's ASD diagnosis is represented by ASD Status; parents' post-treatment levels of acting with awareness is represented by Post-Tx AA; the interaction between parents' post-treatment levels of acting with awareness and the child's ASD diagnosis is represented by AAxASD.

Aim 3

A hierarchical multiple linear regression was used to examine the effects of changes in parents' mindful non-judgment on internalizing problems in children with ASD. Overall, changes in parents' mindful non-judgment accounted for a significant proportion of variance in internalizing problems in children with ASD and children with other DD $F(5, 114) = -1.85$, $p < .05$ (Table 5). The optimal linear combination of parents' non-judgment and their child's diagnosis accounted for approximately 68.30% of the variance in levels of internalizing problems in children with ASD ($R^2_{adj} = .68$). Changes in parents' mindful non-judgment significantly predicted levels of internalizing problems in children with ASD. Specifically, as parent's mindful non-judgment increased by 1 point, children's internalizing problems decreased by 1.85-points at the mean of changes in parents' mindful non-judgment levels and holding all other predictors that are not involved in the interaction constant ($b = -1.85$, 95% CI [-3.35, -.35], $p < .05$). Additionally, child's ASD status did significantly predict levels of internalizing problems $F(5, 15) = 8.67$, $p < .05$ (Table 4). However, there was not a significant interaction effect between changes in parents' mindful non-judgment and the child's diagnosis on child internalizing problems, $p > .05$.

Table 5. Hierarchical Linear Regression Analysis of Changes in Parents' Mindful Non-Judgment Predicting Internalizing Problems Post-Treatment

	b	β	*t*	*p*	95% CI (*b*)	R^2_{adj}	pr^2	sr^2
Step 1						.39		
Baseline Int	.90	.71	3.74	.00	[.39, 1.42]		.45	.45
Baseline NJ	.90	.17	.87	.40	[-1.28, 3.08]		.04	.02
Step 2						.51		
Baseline Int	.75	.59	3.27	.01	[.26, 1.23]		.40	.32
Baseline NJ	.16	.03	.16	.87	[-1.92, 2.25]		.00	.00
ASD Status	8.30	.39	2.25	.04	[.49, 16.10]		.24	.13
Step 3						.67		
Baseline Int	.68	.54	3.60	.00	[.28, 1.08]		.46	.23
Baseline NJ	.19	.04	.24	.81	[-1.53, 1.92]		.00	.00
ASD Status	9.44	.45	3.09	.01	[2.92, 15.96]		.38	.17
Post-Tx NJ	-2.06	-.39	-2.93	.01	[-3.55, -.56]		.36	.15
Step 4						.68		
Baseline Int	.75	.59	3.92	.00	[.34, 1.16]		.52	.26
Baseline NJ	1.83	.34	1.27	.23	[-1.27, 4.92]		.10	.03
ASD Status	8.66	.40	3.92	.01	[2.15, 15.17]		.37	.14
Post-Tx NJ	-1.85	-.35	-2.64	.02	[-3.35, -.35]		.33	.11
NJxASD	-2.22	-.33	-1.35	.19	[-5.76, 1.31]		.11	.04

Note. Parents' baseline report of their child's internalizing problems is represented by Baseline Int; parents' baseline levels of non-judgment is represented by Baseline NJ; child's ASD diagnosis is represented by ASD Status; parents' post-treatment levels of non-judgment is represented by Post-Tx NJ; the interaction between parents' post-treatment levels of non-judgment and the child's ASD diagnosis is represented by NJxASD.

CHAPTER FOUR

DISCUSSION

A growing body of literature has highlighted the impact of parental stress on the development of behavioral problems in children with ASD (Neece, 2014; Singh, et al., 2006) and that parents of children with ASD as well as other DD who participated in MBSR reported less parenting stress (Bazzano, et al., 2015; Beer, Ward, & Moar, 2013; Neece, 2014; Singh et al., 2015) and fewer child behavior problems (Neece, 2014, Chan & Neece, 2017). However, research on the relation between parenting stress, MBSR, and internalizing problems specially in children with ASD has been limited. In the present study, we investigated the relation between parents' use of MBSR and internalizing problems in a sample of children with DD/IDD, with child ASD status as a moderator. We predicted that children of parents who participated in an MBSR intervention would show greater reductions in internalizing problems post-treatment compared to children of parents who were in the waitlist control group. Additionally, we predicted that children of parents who had increases of mindful acting with awareness and parents who had increases of mindful nonjudgment, would have greater reductions in internalizing problems. Finally, we predicted that the three aforementioned relations would be moderated by child's ASD status, such that children with ASD would have greater reductions in internalizing than children with DD.

The current study investigated the relation between parents' use of MBSR and child internalizing problems in children with ASD and DD, with an emphasis on increases in the mindful facets of acting with awareness and non-judgment. Across all Aims, we found that after parents participated MBSR, only 47% of children met clinical

levels of internalizing problems, compared to roughly 68% who met clinical cut-offs at the baseline assessment. Parents who participated in MBSR reported significant reductions in their child's internalizing problems post-treatment compared with parents who had not participated in MBSR. However, ASD status was not found to be a significant moderator of the relation between parents' participation in MBSR and child internalizing problems. The fact that the relation between parents' use of MBSR and internalizing problems was not different between groups, indicates that MBSR parenting interventions may be generalizable in reducing internalizing problems across children with ASD as well as various forms of DD. This finding is particularly salient as previous research has shown that internalizing problems may manifest differently in children with ASD compared to children with various DD (Davis, et al., 2010). Therefore, despite differences in symptomology, MBSR parenting interventions may be implemented to address child internalizing problems regardless of diagnosis.

The relation between parents' use of mindfulness skills learned in MBSR and reductions in internalizing problems for children with ASD and DD may be further explained by increases in specific facets of mindfulness such as acting with awareness and non-judgment. We found that within the MSBR group, children of parents who had greater increases in acting with awareness post-treatment, exhibited a greater reduction in internalizing problems post-treatment. We also found that children of parents who had greater increases in non-judgment post-treatment, had greater reduction in internalizing problems post-treatment. However, neither of these findings were moderated by child's ASD status, indicating that increases in parents ability to act with awareness and/or increases in parents non-judgment interactions with their child may reduce internalizing

problems in children with ASD as well as children with DD.

Our findings are consistent with that of previous research on TD children, such that research has shown that parents who act with awareness are more responsive to their child's emotions (Duncan, Coatsworth, & Greenberg, 2009). Additionally, children of parents who act with awareness tend to report lower levels of internalizing problems as a result of parents being more aware of their child's needs (van der Sluis, van Steensel, & Bögels, 2015). Similarly, TD children whose parents respond to them non-judgmentally report reductions in internalizing problems such as anxiety and depression (Parent, McKee, Rough, and Forehand, 2015). Although, more research is necessary to further investigate this relation, it is possible that parents' use of acting with awareness and non-judgment may be key components in the reduction of internalizing problems in children with ASD and DD. These findings highlight the need for additional research on how parents' use of aspects of mindfulness may impact internalizing problems in children with ASD and children with DD.

Additionally, we found that within the MBSR group child's ASD status significantly predicted post-treatment internalizing problems in our Aim 2 and Aim 3 models, such that children with ASD had greater levels of internalizing problems. This finding is consistent with the literature which highlights the high prevalence rates of comorbid internalizing problems, such as anxiety or depression, in children with ASD (de Ruiter, Dekker, Verhulst, and Koot, 2007; Mayes, Calhoun, Murray, Ahuja, & Smith, 2011; Matson, Hess, and Boisjoli, 2010; Simonoff et. al, 2008; van Steensel, Bögels, & Perrin, 2011). As previous research has shown internalizing problems can have detrimental effects in individuals with ASD as they age (Gotlib, Lewinsohn, & Seeley,

1998; Hughes & Gullone, 2008) leading to poor mental and physical health outcomes (Birmaher et al., 1996; Essau, Conradt, & Petermann, 2002; Kasen et al., 2001; Woodward & Fergusson, 2001). These findings further emphasize the importance of addressing internalizing problems early on in such a vulnerable population.

Limitations

First, sample size is a statistical concern for this study. Using guidelines provided by Ferguson (2009), a sample size of approximately 55 people is needed to detect a truly significant medium effect size of $f^2 = .15$ and approximately 25 individuals to detect a truly significant large effect size of $f^2 = .35$. According to a power analysis, for Aim 1 we had approximately 99% power to detect a truly significant effect of $R^2 = .55$ at $\alpha = .05$ and with four predictors. Additionally, for Aim 2 we had approximately 99% power to detect a truly significant effect of $R^2 = .69$ at $\alpha = .05$ and with five predictors. For Aim 3 we had approximately 99% power to detect a truly significant effect of $R^2 = .63$ at $\alpha = .05$ and with four predictors.

Although our findings are promising, these results are not without limitations, first this study did not use an active treatment control group, and therefore, the findings only suggest that MBSR is more beneficial than no treatment at all. Future studies may benefit from comparing MBSR to other stress- reduction or psychoeducation groups as control.

Additionally, another limitation to this study was the lack of clarity in child diagnoses. Despite the fact that parents were asked to report the children's primary diagnosis upon study entry, the categories of diagnosis were not mutually exclusive. For

instance, although over 61% endorsed having a child whose primary diagnosis was ASD, it is possible that families whose children had a primary diagnosis of another DD (e.g. Downs Syndrome), their child may have also fallen on the autism spectrum as well. Furthermore, in addition to parents' ratings of ASD or not, families were also asked to complete the Gilliam Autism Rating Scale, Second Edition (GARS-2) to support ASD diagnoses within the context of the study, however research has highlighted potential issues with test sensitivity in regard to GARS-2 (Montgomery, Newton, & Smith,2008) and therefore future studies may benefit from utilizing more sensitive measures in regard to ASD classification.

Furthermore, an additional limitation is that our findings relied entirely on parent-report data to measure both parental changes in mindfulness facets and child internalizing problems. It is possible that parent perception and reporting biases may have influenced our findings. For instance, due to the highly comorbid nature of ASD and internalizing problems (Vasa & Mazurek, 2015) it may be difficult for parents to decipher what symptoms are an aspect of ASD and what are indicators of burgeoning internalizing problems. Moreover, higher levels of stress at baseline or lower levels of stress post-treatment may affect parents' reports of child internalizing problems; such that parents may be more inclined to report more internalizing problems in their children if they are feeling more stressed and less likely to report higher levels if they are less stressed Future studies may benefit from utilizing additional reports of child internalizing problems (e.g. alternative caregivers) as well as observational measures. Additionally, it may be beneficial to look at more than two time points to further investigate how the intervention may benefit children with ASD and DD over time.

Conclusions

Despite these limitations, the implications of these results are significant and may help to further explain the relation between parents' use of MBSR and child internalizing problems and provide the groundwork for future longitudinal research. As research has shown, internalizing problems may continue throughout the lifetime and become more severe if left unidentified and untreated (Davis, Ollendick, & Nebel-Schwalm, 2008; Kendall, 1994; Spence, Rapee, McDonald, & Ingram, 2001). Therefore, improving parents' ability to act with awareness and interact non-judgmentally with their children may play a key role in reducing internalizing problems in children with ASD and DD early on and bypass some of these negative long-term outcomes. This treatment offers a novel approach to treating comorbid internalizing problems in children with ASD as well as children with DD. Parents' use of MBSR provides a method of early intervention which may impede the development of internalizing problems over time. The current study helps to inform future parenting interventions by highlighting the importance of addressing specific facets of mindfulness in interventions which may lead to greater reductions internalizing problems in vulnerable populations such as children with ASD and DD.

REFERENCES

Abidin, R. R. (1990). *Parenting Stress Index Manual (3rd ed.).* Charlottesville, VA: Pediatric Psychology Press

Achenbach T. M. (2000) *Manual for the Child Behavior Checklist 1 1/2-5*. University of Vermont, Department of American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.). Arlington, VA: American Psychiatric Publishing.

Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*, 27-45.

Baker B. L., Blacher J., Crnic K., & Edelbrock C. (2002). Behavior problems and parenting stress in families of three-year-old children with and without DD . *American Journal on Mental Retardation 107***,** 433-444.

Baker, B. L., McIntyre, L. L., Blacher, J., Crnic, K., Edelbrock, C., & Low, C. (2003). Pre-school children with and without developmental delay: Behaviour problems and parenting stress over time. *Journal of Intellectual Disability Research, 47*(4-5), 217-230.

Baker, B.L., Neece, C.L., Fenning, R.M., Crnic, K., & Blacher, J. (2010). Mental disorders in five-year-old children with or without intellectual disability: Focus on ADHD. *Journal of Clinical Child and Adolescent Psychology*, *39*(4), 492-505.

Bauminger, N., Solomon, M., & Rogers, S. J. (2010). Externalizing and internalizing problems in ASD. *Autism Research, 3*(3), 101-112.

Bazzano, A., Wolfe, C., Zylowska, L., Wang, S., Schuster, E., Barrett, C., & Lehrer, D. (2015). Mindfulness based stress reduction (MBSR) for parents and caregivers of individuals with developmental disabilities: A community-based approach. *Journal of Child and Family Studies, 24*(2), 298-308.

Beck J.S. (2011), *Cognitive behavior therapy: Basics and beyond* (2nd ed.), New York, NY: The Guilford Press, pp. 19–20 behavior and DD . *Research in Developmental Disabilities, 28*, 546–558.

Beer, M., Ward, L., & Moar, K. (2013). The relationship between mindful parenting and distress in parents of children with an autism spectrum disorder. *Mindfulness, 4*(2), 102-112.

Benn, R., Akiva, T., Arel, S., & Roeser, R. W. (2012). Mindfulness training effects for parents and educators of children with special needs. *Developmental Psychology, 48*(5), 1476-1487.

Berg, B. (2009). *Qualitative research methods for the social sciences*. Boston: Allyn and Bacon.

Birmaher, B., Ryan, N. D., Williamson, D. E., Brent, D. A., Kaufman, J., Dahl, R. E., et al. (1996). Childhood and adolescent depression: A review of the past 10 years. Part I. *Journal of the American Academy of Child and Adolescent Psychiatry, 35*, 1427−1439.

Bitsika, V., Sharpley, C. F., Andronicos, N. M., & Agnew, L. L. (2016). Prevalence, structure and correlates of anxiety-depression in boys with an autism spectrum disorder. *Research in Developmental Disabilities, 49-50*, 302-311.

Blacher, J. (1994). *When there's no place like home: Options for children living apart from their natural families*. Baltimore, MD, US: Paul H Brookes Publishing. Bogels S. and Siqueland L. (2006) Family cognitive behavioral therapy for children and adolescents with clinical anxiety disorders. *Journal of the American Academy of Child and Adolescent Psychiatry. 445*:131–141.

Bromley, B. E., & Blacher, J. (1991). Parental reasons for out-of-home placement of children with severe handicaps. *Mental Retardation, 29*(5), 275-280.

Bullis, J. R., Bøe, H. J., Asnaani, A., & Hofmann, S. G. (2014). The benefits of being mindful: Trait mindfulness predicts less stress reactivity to suppression. *Journal of Behavior Therapy and Experimental Psychiatry, 45*(1), 57-66.

Burkhart, K., Knox, M., & Hunter, K. (2017). Cognitive-behavioral therapy in the treatment of internalizing disorders in high-functioning youth with autism spectrum disorder. *Journal of Contemporary Psychotherapy, 48*(3), 155-163.

Brown, D. B., Bravo, A. J., Roos, C. R., & Pearson, M. R. (2015). Five Facets of Mindfulness and Psychological Health: Evaluating a Psychological Model of the Mechanisms of Mindfulness. *Mindfulness*, *6*(5), 1021–1032.

Campbell, S. B., & Ewing, L. J. (1990). Follow-up of hard-to- manage preschoolers : Adjustment at age 9 and predictors of continuing symptoms. *Journal of Child Psychology and Psychiatry, 31*, 871–889.

Carmody, J., & Baer, R. A. (2008). Relationships between mindfulness practice and levels of mindfulness, medical and psychological symptoms and well-being in a mindfulness-based stress reduction program. *Journal of Behavioral Medicine, 31*(1), 23-33.

Chorpita, B. F., & Daleidan, E. L. (2009). Mapping evidence-based treatments for children and adolescents: Application of the distillation and matching model to 615 treatments. *Journal of Counseling and Clinical Psychology, 77*(3), 566–579.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). Applied multiple regression/correlation analysis for the behavioral sciences, third edition. Mahwah, NJ: Lawrence Erlbaum Associates.

Costa, A. P., Steffgen, G., & Ferring, D. (2017). Contributors to well-being and stress in parents of children with autism spectrum disorder. *Research in Autism Spectrum Disorders, 37*, 61-72.

Costello, E. J., Egger, H. L., & Angold, A. (2005). The developmental epidemiology of anxiety disorders: Phenomenology, prevalence, and comorbidity. Child and Adolescent Psychiatric Clinics of North America, 14(4), 631-648.

Craig, F., Operto, F. F., De Giacomo, A., Margari, L., Frolli, A., Conson, M., . . . Margari, F. (2016). Parenting stress among parents of children with neurodevelopmental disorders. *Psychiatry Research, 242*, 121-129.

Davis, S.D., Young, E.L., Hardman, S., & Winters, R. (2011). Screening for emotional and behavioral disorders. *Principle Leadership, 11*(9), 12-17.

Davis, T. E., & Ollendick, T. H. (2005). Empirically supported treatments for specific phobia in children: Do efficacious treatments address the components of a phobic response*? Clinical Psychological Science Practice, 12*(2), 144–160.

Davis, T. E., Hess, J. A., Moree, B. N., Fodstad, J. C., Dempsey, T., Jenkins, W. S., & Matson, J. L. (2011). Anxiety symptoms across the lifespan in people diagnosed with autistic disorder. *Research in Autism Spectrum Disorders, 5*(1), 112-118.

Davis, T. E., I., II, Hess, J. A., Matthews, R. A., Fodstad, J. C., Dempsey, T., Jenkins, W. S., . . . Matson, J. L. (2011). The moderating effect of anxiety on development in aTD toddlers. *Journal of Psychopathology and Behavioral Assessment, 33*(2), 171-177.

Davis, T. E., III, Ollendick, T. H., & Nebel-Schwalm, M. (2008). Intellectual ability and achievement in anxiety-disordered children: A clarification and extension of the literature. *Journal of Psychopathology and Behavioral Assessment, 30*, 43–51.

Davis, T. E., Fodstad, J. C., Jenkins, W. S., Hess, J. A., Moree, B. N., Dempsey, T., & Matson, J. L. (2010). Anxiety and avoidance in infants and toddlers with autism spectrum disorders: Evidence for differing symptom severity and presentation. *Research in Autism Spectrum Disorders, 4*(2), 305-313.

de Ruiter, K. P., Dekker, M. C., Verhulst, F. C., & Koot, H. M. (2007). Developmental course of psychopathology in youths with and without intellectual disabilities. *Journal of Child Psychology, 48*(5):498-507.

Duncan, L. G., Coatsworth, J. D., & Greenberg, M. T. (2009). A model of mindful parenting: implications for parent-child relationships and prevention research. *Clinical child and family psychology review*, *12*(3), 255–270.

Desrosiers, A., Klemanski, D. H., & Nolen-Hoeksema, S. (2013). Mapping mindfulness facets onto dimensions of anxiety and depression. *Behavior Therapy, 44*(3), 373-384.

Dyches, T. T., Smith, T. B., Korth, B. B., Roper, S. O., & Mandleco, B. (2012). Positive parenting of children with developmental disabilities: A meta-analysis. *Research in Developmental Disabilities, 33*(6), 2213-2220.

Dykens, E. M., Fisher, M. H., Taylor, J. L., Lambert, W., & Miodrag, N. (2014). Reducing distress in mothers of children with autism and other disabilities: A randomized trial. *Pediatrics, 134*(2), e454-e463.

Emerson, E. (2003). Prevalence of psychiatric disorders in children and adolescents with and without intellectual disability. *Journal of Intellectual Disability Research, 47*(1), 51-58.

Emerson, E. (2003). Prevalence of psychiatric disorders in children and adolescents with and without intellectual disability. *Journal of Intellectual Disability Research*, *47*(1), 51-58.

Essau, C. A., Conradt, J., & Petermann, F. (2002). *Course and outcome of anxiety disorders in adolescents. Journal of Anxiety Disorders, 16*, 67−81.

Evans, D. W., Canavera, K., Kleinpeter, F. L., Maccubbin, E., & Taga, K. (2005). The fears, phobias and anxieties of children with autism spectrum disorders and down syndrome: Comparisons with developmentally and chronologically age matched children. *Child Psychiatry and Human Development, 36*(1), 3-26.

Ferguson, C. J. (2009). An effect size primer: A guide for clinicians and researchers. *Professional Psychology: Research and Practice*, *40*(5), 532.

Galambos, N. L., Baker, E. T., & Almeida, D. M. (2003). Parents do matter: Trajectories of change in externalizing and internalizing problems in early adolescence. *Child Development, 74*, 578–594.

Ghandour, R. M., Sherman, L. J., Vladutiu, C. J., Ali, M. M., Lynch, S. E., Bitsko, R. H., Blumberg, S. J. (2019) Prevalence and treatment of depression, anxiety, and conduct problems in U.S. children. *The Journal of Pediatrics*, *206*(3), 256-267.

Geurtzen, N., Scholte, R. H., Engels, R. C., Tak, Y. R., & van Zundert, R. M. (2015). Association between mindful parenting and adolescents' internalizing problems:

non-judgmental acceptance of parenting as core element. *Journal of Child and Family Studies*, *24* (4), 1117–1128.

Goel, R., Hong, J. S., Findling, R. L., & Ji, N. Y. (2018). An update on pharmacotherapy of autism spectrum disorder in children and adolescents. *International Review of Psychiatry, 30*(1), 78-95.

Gotham, K., Brunwasser, S. M., & Lord, C. (2015). Depressive and anxiety symptom trajectories from school age through young adulthood in samples with autism spectrum disorder and developmental delay. *Journal of the American Academy of Child and Adolescent Psychiatry, 54*(5), 369-376.

Gotlib, I. H., Lewinsohn, P. M., & Seeley, J. R. (1998). Consequences of depression during adolescence: Marital status and marital functioning in early adulthood. Journal of Abnormal Psychology, *107*, 686−690.

Gu, J., Strauss, C., Crane, C., Barnhofer, T., Karl, A., Cavanagh, K., & Kuyken, W. (2016). Examining the factor structure of the 39-item and 15-item versions of the Five Facet Mindfulness Questionnaire before and after mindfulness-based cognitive therapy for people with recurrent depression. *Psychological assessment*, *28*(7), 791–802.

Higa-McMillan, C., Francis, S. E., Rith-Najarian, L., & Chorpita, B. F. (2016). Evidence base update: 50 years of research on treatment for child and adolescent anxiety. *Journal of Clinical Child and Adolescent Psychology, 45*(2), 91-113.

Hirshfeld-Becker, D., Masek, B., Henin, A., Blakely, L. R., Pollock-Wurman, R., McQuade, J., . . . Biederman, J. (2010). Cognitive behavioral therapy for 4- to 7-year-old children with anxiety disorders: A randomized clinical trial. *Journal of Consulting and Clinical Psychology, 78*(4), 498-510.

Hodges, K. and Plow, J. (1990). Intellectual ability and achievement in psychiatrically hospitalized children with conduct, anxiety, and affective disorders. *Journal of Consulting and Clinical Psychology, 58*, 589–595.

Hughes, E. K., & Gullone, E. (2008). Internalizing symptoms and disorders in families of adolescents: A review of family systems literature. *Clinical Psychology Review, 28*(1), 92-117.

Ishikawa, S., Okajima, I., Matsuoka, H., & Sakano, Y. (2007). Cognitive behavioural therapy for anxiety disorders in children and adolescents: A meta-analysis. *Child and Adolescent Mental Health, 12*(4), 164-172.

Ji, N. Y., & Findling, R. L. (2015). An update on pharmacotherapy for autism spectrum disorder in children and adolescents. *Current Opinion in Psychiatry, 28*(2), 91-101.

Jones, L., Hastings, R. P., Totsika, V., Keane, L., & Rhule, N. (2014). Child behavior problems and parental well-being in families of children with autism: The mediating role of mindfulness and acceptance. *American Journal on Intellectual and Developmental Disabilities, 119*(2), 171-185.

Kabat-Zinn, J., Massion, A. O., Kristeller, J., Peterson, L. G., Fletcher, K. E., Pbert, L., . . . Santorelli, S. F. (1992). Effectiveness of a meditation-based stress reduction program in the treatment of anxiety disorders. *The American Journal of Psychiatry, 149*(7), 936-943.

Kasen, S., Cohen, P., Skodol, A. E., Johnson, J. G., Smailes, E., & Brook, J. S. (2001). *Childhood depression and adult personality disorder. Archives of General Psychiatry, 58,* 231−236.

Keehn, R. H. M., Lincoln, A. J., Brown, M. Z., & Chavira, D. A. (2013). The Coping Cat program for children with anxiety and autism spectrum disorder: A pilot randomized controlled trial. *Journal of Autism and Developmental Disorders, 43*(1), 57–67.

Kendall, P. C. (1994). Treating anxiety disorders in children: Results of a randomized clinical trial. *Journal of Consulting and Clinical Psychology, 62*, 100–110.

Kendall, P. C., & Hedtke, K. A. (2006). *Cognitive-behavioral therapy for anxious youth: Therapist manual* (3rd edn.). Ardmore, PA: Workbook Publishing.

Kendall, P. C., Flannery-Schroeder, E., Panichelli-Mindel, S. M., Southam-Gerow, M., Hein, A., & Warman, M. (1997). Therapy for youths with anxiety disorders: A second randomized clinical trial. Journal of Consulting & Clinical Psychology, 65, 366–380.

Kerns, C. M., Kendall, P. C., Zickgraf, H., Franklin, M. E., Miller, J., & Herrington, J. (2015). Not to be overshadowed or overlooked: Functional impairments associated with comorbid anxiety disorders in youth with asd. *Behavior Therapy, 46*(1), 29-39.

Lavigne, J. V., Arend, R., Rosenbaum, D., Binns, H. J., Kaufer-Cristoffel, K., & Gibbons, R. D. (1998). Psychiatric disorders with onset in the preschool years: I. Stability of diagnoses. *Journal of the American Academy of Child and Adolescent Psychiatry, 37*, 1246–1254.

Leve, L. D., Kim, H. K., & Pears, K. C. (2005). Childhood temperament and family environment as predictors of internalizing and externalizing trajectories from ages 5 to 17. *Journal of Abnormal Child Psychology*, *33*(5), 505-520.

Leyfer, O. T., Folstein, S. E., Bacalman, S., Davis, N. O., Dinh, E., Morgan, J., . . . Lainhart, J. E. (2006). Comorbid psychiatric disorders in children with autism:

Interview development and rates of disorders. *Journal of Autism and Developmental Disorders, 36*(7), 849-861.

Liu, J., Chen, X., & Lewis, G. (2011). Childhood internalizing behaviour: analysis and implications. *Journal of psychiatric and mental health nursing, 18*(10), 884-94.

Manassis, K., Wilansky-Traynor, P., Farzan, N., Kleiman, V., Parker, K., & Sanford, M. (2010). The feelings club: Randomized controlled evaluation of school-based CBT for anxious or depressive symptoms. *Depression and Anxiety, 27*(10), 945-952.

Marchand, J. F., Hock, E., & Widaman, K. (2002). Mutual relationships between mothers' depressive symptoms and hostile-controlling behavior and young children's externalizing and internalizing behavior problems. *Parenting: Science and Practice*, *2*, 335–353.

Markon, K. E. (2010). How things fall apart: Understanding the nature of internalizing through its relationship with impairment. *Journal of Abnormal Psychology, 119*(3), 447-458.

Matson, J. L., Hess, J. A., & Boisjoli, J. A. (2010). Comorbid psychopathology in infants and toddlers with autism and pervasive developmental disorders-not otherwise specified (PDD-NOS). *Research in Autism Spectrum Disorders, 4*(2), 300-301.

Mayes, S. D., Calhoun, S. L., Murray, M. J., Ahuja, M., & Smith, L. A. (2011). Anxiety, depression, and irritability in children with autism relative to other neuropsychiatric disorders and typical development. *Research in Autism Spectrum Disorders, 5*(1), 474-485.

McRae, E. M., Stoppelbein, L., O'Kelley, S. E., Fite, P., & Greening, L. (2018). Predicting internalizing and externalizing symptoms in children with ASD: Evaluation of a contextual model of parental factors. *Journal of Autism and Developmental Disorders, 48*(4), 1261-1271.

Melis Yavuz, H., Selcuk, B., Corapci, F., & Aksan, N. (2017). Role of temperament, parenting behaviors, and stress on Turkish preschoolers' internalizing symptoms. *Social Development, 26*(1), 109-128.

Merrell, K. W. (2008). *Helping students overcome depression and anxiety: A practical guide* (2nd ed.) Guilford Press, New York, NY. Retrieved from https://search-proquest-com.proxy.library.ucsb.edu:9443/docview/622132756?accountid=14522

Merrell, K. W., & Walker, H. M. (2004). Deconstructing a definition: Social maladjustment versus emotional disturbance and moving the EBD field forward. *Psychology in the Schools, 41*(8), 899-910.

Mesman, J., Bongers, I. L., & Koot, H. M. (2001). Preschool developmental pathways to preadolescent internalizing and externalizing problems. *Journal of Child Psychology and Psychiatry, 42*(5), 679-689.

Mizera, C. M., Bolin, R. M., Nugent, W. R., & Strand, E. B. (2016). Facets of mindfulness related to a change in anxiety following a mindfulness-based intervention. *Journal of Human Behavior in the Social Environment, 26*(1), 100-109.

Montgomery, J. M., Newton, B., & Smith, C. (2008). Review of GARS-2: Gilliam autism rating scale-second edition. *Journal of Psychoeducational Assessment, 26*(4), 395-401.

Neece, C. L. (2014). Mindfulness-based stress reduction for parents of young children with DD : Implications for parental mental health and child behavior problems. *Journal of Applied Research in Intellectual Disabilities, 27*(2), 174-186.

Neece, C.L., Green, S., Baker, B.L. (2012). Relationship between parenting stress and child behavior problems: An examination across time. *Journal of Intellectual and Developmental Disabilities, 117(1),* 48-66.

Orsmond, G. I., Seltzer, M. M., Krauss, M. W., & Hong, J. (2003). Behavior problems in adults with mental retardation and maternal well-being: Examination of the direction of effects. *American Journal on Mental Retardation, 108*(4), 257-271. Psychiatry, Burlington, VT. *Psychopathology*, *1*, 5–19.

Parent, J., McKee, L. G., Rough, J. N., & Forehand, R. (2016). The association of parent mindfulness with parenting and youth psychopathology across three developmental stages. Journal of Abnormal Child Psychology, *44*, 191–202.

Park, J. H., Kim, Y., Koh, Y., Song, J., & Leventhal, B. L. (2014). A contrast of comorbid condition and adaptive function between children with autism spectrum disorder from clinical and non-clinical populations. *Research in Autism Spectrum Disorders, 8*(11), 1471-1481.

Reaven, J. A., Blakeley-Smith, A., Nichols, S., Dasari, M., Flanigan, E., & Hepburn, S. (2009). Cognitive-behavioral group treatment for anxiety symptoms in children with high-functioning autism spectrum disorders: A pilot study. *Focus on Autism and Other Developmental Disabilities, 24*(1), 27-37.

Reiersen, A. M., & Handen, B. (2011). Commentary on 'Selective serotonin reuptake inhibitors (SSRIs) for autism spectrum disorders (ASD)'. *Evidence-based child health : a Cochrane review journal*, *6*(4), 1082–1085.

Rodriguez, C. M. (2011). Association between independent reports of maternal parenting stress and children's internalizing symptomatology. *Journal of Child and Family Studies, 20*(5), 631-639.

Rose, S. L., Rose, S. A., & Feldman, J. F. (1989). Stability of behavior problems in very young children. Development and Psychopathology, *1*, 5-19.

Rosenberg, R. E., Kaufmann, W. E., Law, J. K., & Law, P. A. (2011). Parent report of community psychiatric comorbid diagnoses in autism spectrum disorders. *Autism Research and Treatment, 2011*, Article ID 405849.

Rutter M., Tizard J., Yule W., Graham P. & Whitmore K. (1977). Isle of Wight studies, 1964–1974. *Annual Progress in Child Psychiatry & Child Development*, 359-392.

Singh, N. N., Lancioni, G. E., Winton, A. S. W., Singh, J., Curtis, W. J., Wahler, R. G., & McAleavey, K. M. (2007). Mindful parenting decreases aggression and increases social behavior in children with developmental disabilities. *Behavior Modification, 31*(6), 749-771.

Singh, N. N., Lancioni, G. E., Winton, A. S. W., Fisher, B. C., Wahler, R. G., McAleavey, K., . . . Sabaawi, M. (2006). Mindful parenting decreases aggression, noncompliance, and self-injury in children with autism. *Journal of Emotional and Behavioral Disorders, 14*(3), 169-177.

Sher-Censor, E., Shulman, C., & Cohen, E. (2018). Associations among mothers' representations of their relationship with their toddlers, maternal parenting stress, and toddlers' internalizing and externalizing behaviors. *Infant Behavior & Development, 50*, 132-139.

Spence, S. H., Rapee, R., McDonald, C., & Ingram, M. (2001). The structure of anxiety symptoms among preschoolers. *Behaviour Research and Therapy, 39*(11), 1293-1316.

Storch, E. A., Arnold, E. B., Lewin, A. B., Nadeau, J. M., Jones, A. M., De Nadai, A. S., et al. (2013). The effect of cognitive-behavioral therapy versus treatment as usual for anxiety in children with autism spectrum disorders: A randomized, controlled trial. *Journal of the American Academy of Child and Adolescent Psychiatry, 52*(2), 132–142.

Storch, E. A., Nadeau, J. M., Rudy, B., Collier, A. B., Arnold, E. B., Lewin, A. B., . . . Murphy, T. K. (2015). A case series of cognitive-behavioral therapy augmentation of antidepressant medication for anxiety in children with autism spectrum disorders. *Children's Health Care, 44*(2), 183-198.

Sukhodolsky, D. G., Bloch, M. H., Panza, K. E., & Reichow, B. (2013). Cognitive-behavioral therapy for anxiety in children with high-functioning autism: A meta-analysis. *Pediatrics, 132*(5), e1341-e1350.

Sze, K. M., & Wood, J. J. (2007). Cognitive behavioral treatment of comorbid anxiety disorders and social difficulties in children with high-functioning autism: A case report. *Journal of Contemporary Psychotherapy, 37*(3), 133-143.

Tandon, M., Cardeli, E., & Luby, J. (2009). Internalizing disorders in early childhood: a review of depressive and anxiety disorders. *Child and adolescent psychiatric clinics of North America*, *18*(3), 593-610.

Vasa, R. A., & Mazurek, M. O. (2015). An update on anxiety in youth with autism spectrum disorders. *Current opinion in psychiatry*, *28*(2), 83–90.

van Steensel, Francisca J. A., Bögels, S. M., & Perrin, S. (2011). Anxiety disorders in children and adolescents with autistic spectrum disorders: A meta-analysis. Clinical Child and Family Psychology Review, 14(3), 302-317.

Weissman M. M., Wolk S., Wickramaratne P., Goldstein R. B., Adams P., Greenwald S., Ryan N.D., Dahl R.E., and Steinberg, D. (1999). Children with prepubertal-onset major depressive disorder and anxiety grown up. *Archives General Psychiatry, 56*, 794–801.

Woodman, A. C., Mailick, M. R., & Greenberg, J. S. (2016). Trajectories of internalizing and externalizing symptoms among adults with autism spectrum disorders. *Development and Psychopathology, 28*(2), 565-581.

Woodman, A. C., Mawdsley, H. P., & Hauser-Cram, P. (2015). Parenting stress and child behavior problems within families of children with developmental disabilities: Transactional relationships across 15 years. *Research in Developmental Disabilities, 36*, 264-276.

Woodward, L. J., & Fergusson, D. M. (2001). Life course outcomes of young people with anxiety disorders in adolescence. *Journal of the American Academy of Child and Adolescent Psychiatry*, *40,* 1086−1093.