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An Initial Evaluation of the Mindful Parenting Group for Parents of Children with Autism
Spectrum Disorder

A dissertation submitted in partial satisfaction of the
requirements for the degree Doctor of Philosophy
in Counseling, Clinical, and School Psychology

by

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Jou, R., Reed, H., Kaiser, M.D., Voos, A.C., Volkmar, F.R., Pelphrey, K.A. (2015) White matter abnormalities in autism and unaffected siblings. *Journal of Neuropsychiatry and Clinical Neurosciences*, doi: 10.1176/appi.neuropsych.15050209.

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Voos, A.C. & Pelphrey, K.A. Tools of the Trade: Functional Magnetic Resonance Imaging. (2013). *Journal of Cognition and Development*, 14(1),1-9.

Voos, A.C., Pelphrey, K.A., Tirrell, J., Bolling, D.Z., Vander Wyk, B., Kaiser, M.D., McPartland, J.C., Volkmar, F.R., & Ventola, P. (2013). Neural Mechanisms of Improvements in Social Motivation after Pivotal Response Treatment: Two Case Studies. *Journal of Autism and Development Disorders*, 43,1-10.

Voos, A., & Westphal, A. (2013). Medial temporal lobe. In F. Volkmar (Ed), *The encyclopedia of Autism Spectrum Disorders*. New York: Springer.

Voos, A.C., Pelphrey, K.A., & Kaiser, M.D. (2012). Autistic traits are associated with diminished neural response to affective touch. *Social Cognitive and Affective Neuroscience*, doi: 10.1093/scan/nss009.

Westphal, A., Voos, A. & Pelphrey, K. (2012). Chapter 8: Functional magnetic resonance imaging as a biomarker for the diagnosis, progression and treatment of autistic spectrum disorder. In McArthur, Von Kienlin & Steckler (Eds), *Translational Neuroimaging*. Waltham, MA: Academic Press/Elsevier.

Westphal, A., Voos, A., & Ristow, A. (2013). Childhood disintegrative disorder. In F. Volkmar (Ed), *The encyclopedia of Autism Spectrum Disorders*. New York: Springer.

Westphal, A., Kober, D., Voos, A., & Volkmar, F. (2014). Psychopharmacological treatment of Asperger syndrome. In McPartland, J., Klin, A. & Volkmar, F. (Eds.), *Asperger Syndrome (Second Edition)*. New York: Guilford Press.

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ABSTRACT

An Initial Evaluation of the Mindful Parenting Group for Parents of Children with Autism Spectrum Disorder

by

Avery Caroline Voos

Research has consistently demonstrated that parents of children with Autism Spectrum Disorder (ASD) experience elevated levels of stress when compared to parents of typically developing and developmentally disabled children. High levels of stress have been associated with negative parenting practices, poor parental mental health, and negative child outcomes, including reducing the positive effects of intervention for children with autism. Regardless, there is limited research on direct support for parents. One promising area of therapeutic support focuses on mindfulness. Mindfulness is associated with increased life satisfaction, decreased depression and anxiety, and improved emotion regulation. Due to the normative levels of stress that come with parenting in general, researchers have introduced mindfulness to parents. A literature review identified 6 studies that have implemented some form of mindfulness training specifically with parents of children with autism, all showing promising outcomes. The current study aimed to assess whether an 8-week Mindful Parenting group program positively impacted parents' reported level of mindfulness, parenting stress and parent-child relationship quality. Twenty-one parents participated and

met for 90 minutes weekly in a group format. Self-report questionnaires were collected at intake (pre), after 4 weeks (mid), after completion of the group (post), and at a 5-week follow up session (follow up). Results of within-subject repeated measures analyses of variance (rANOVA) revealed that participation in the group decreased parenting stress, increased overall mindfulness and decreased relational frustration within the parent-child relationship after 8 weeks of participation. These changes were only significant for parenting stress when the follow up data was included in the analysis. Large to medium effects were found for all variables from intake to post and follow up assessment, suggesting clinically meaningful changes in these important areas. The results of the current study suggest that providing group training in mindfulness is a feasible support for parents of children with autism. The implications and limitations of these findings are discussed further.

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Introduction

Parenting Stress

There is a certain amount of normative stress that comes with parenting in general, as the very nature of the pursuit involves the addition of caring for another human life. The stressors that come along with parenthood are by no means unique to one population of parents, but instead relate globally to the everyday hassles and challenges experienced by all individuals raising a child (Crnic & Greenberg, 1990). These challenges shift as the child develops, but start with creating a nurturing, safe environment for a young infant whose every need must be satisfied by the parent. These demands are required of parents 24 hours a day, seven days a week, and often must be completed with limited sleep. Parents must continue to meet their child's basic needs while also navigating their own emotional, work, family and social lives. Additional difficulties arise as toddlers work through their first attempts at independence. School becomes a new arena that parents must navigate, preparing their child for the transition to school and supporting their studies as they move through school age. Each stage in development has a normative amount of stress associated with the unique challenges of the child's developmental level (e.g. terrible twos, teenage hormones, etc.)

Parenting stress has been conceptualized in multiple ways (Crnic et al., 2005). One focus has been on major life events, in which stressful life events or conditions are hypothesized to impact one's level of stress. This conceptualization is not unique to parenting, but arose from stress research in general (Crnic et al., 2005). Another, put forth by Richard Abidin (1990), highlights the impact of both parenting distress and child difficulties on level of stress. This has been instrumental in the creation of Parenting Stress Index (PSI);

a measure of parenting stress that allows for the separation of stress related to parenting in general, and the behavior and characteristics of the child more specifically. Lastly, parenting stress has been conceptualized as the cumulative effect of “parenting daily hassles” experienced by all parents. In this model, the way in which these “hassles” are experienced by the parent is what influences parenting stress. It is thus the interpretation and reaction to daily parenting hassles that impact perceived level of parenting stress, as this model highlights the notion that not all parents perceive these hassles as universally stressful (Crnic & Low, 2002). While multiple conceptualizations exist, the common theme is that of a parent feeling overwhelmed by the responsibilities and challenges that arise from parenthood.

Parenting stress can more broadly defined as “a consequence of a complex set of significant and persistent challenges associated with care of the child” (Pisula, 2011). It may be helpful to recognize that stress more generally has been conceptualized as a situation in which a person perceives the demands of life to be beyond their available resources and thus, threatens well-being (Lazarus & Folkman, 1984). Applied to parenting, Deater-Deckard (1998) succinctly defined parenting stress as “the aversive psychological reaction to the demands of being a parent” (p. 315), aptly highlighting the importance of parental perception of the demands associated with parenthood. Research in the realm of parenting stress has been influential in highlighting its impact on both the parents and the developing child. A strong link between parenting stress and negative outcomes include negative parenting practices, less parenting involvement and increased child behavior problems (Crnic & Low, 2002; Repetti & Wood, 1997; Crnic et al., 2005).

Autism Spectrum Disorder

Autism spectrum disorder (ASD) is an early onset, pervasive neurodevelopmental disorder characterized by deficits in social communication and interaction, and restricted and repetitive interests and behaviors (APA, 2013). While evidence-based interventions exist for young children with autism and can lead to remarkable gains (Fein et al., 2013; Sallows & Graupner, 2005), autism is still considered a lifelong, chronic disorder (Rogers & Vismara, 2008). A 17-year prospective study demonstrated that 9% of individuals who were diagnosed with ASD at age 2 had overcome many of the core difficulties associated with the diagnosis and no longer retained an ASD diagnosis at age 19 (Anderson, Liang & Lord, 2014). These studies demonstrate the power of early intervention, as the aforementioned group was more likely to have received intervention between ages 2 and 3 years of age (Anderson, Liang & Lord, 2014). It also demonstrates that a large portion of individuals diagnosed at an early age will still exhibit difficulties associated with the diagnosis of ASD into early adulthood. As children work to overcome developmental and behavioral challenges, their parents face their own set of challenges. While there can be great joy experienced living with a child with ASD (see Myers et al., 2009 for detailed description of both positive and negative parental experiences), there can also be high levels of stress (Hayes & Watson, 2013).

Parents of children with autism often face unique challenges. These issues can be outlined in reference to the symptoms inherent to their child's diagnosis of ASD. The fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM 5; APA, 2013) characterizes ASD as clinical impairments in two areas: social communication and interaction, and restricted or repetitive patterns of behavior, interests, or activities. More specifically, these deficits in social communication can manifest in individuals with ASD as

difficulties with social-emotional reciprocity, nonverbal communicative behaviors, as well as the development, maintenance, and understanding of social relationships. The impairments in social communication and interaction may be the primary factor that impacts parents.

Research has documented that parents whose child have more severe impairments with social interaction also have the highest levels of stress (Kasari & Sigman, 1997). The limited social engagement and reciprocity experienced by parents can often be devastating. Traditionally, the deeply rewarding social connection and relationship that unfolds between a parent and child over time overshadows the normal stressors of parenting. Infants as young as three days old show a preference for human motion (Simion et al., 2008), demonstrating the innately social nature of human beings. Parents of children with ASD often have more limited experiences of parent-child connectedness, and at the very least, have to work harder to engage socially with their children. The difficulties many children with ASD face with social communication often makes engaging in meaningful reciprocal interactions challenging for parents. The persistent difficulties in developing, maintaining and understanding social relationships can cause worry and frustration in parents, and can lead to the familial isolation (Woodgate, Ateah & Secco, 2008). In addition, parents often struggle with the persistent fear of whether their child will have meaningful relationships and be able to lead an independent life (Gray, 2002).

Under the realm of restricted and repetitive patterns of behavior, individuals must exhibit at least two of the following in order to meet diagnostic criteria for ASD: demonstration of stereotyped or repetitive behaviors, behavioral inflexibility and insistence on sameness, highly restricted and fixated interests, and hyper- or hypo-reactivity to sensory input. These challenges are often difficult for parents to manage at home, and especially

during community outings. Restricted interests dominate interactions and conversations, often leaving parents feeling exasperated. Parents may isolate due to fear of the outcome of their child's behavioral challenges as well as fear of judgment from others. Spouses and siblings often take the back seat to the disruptive and aggressive behavior of the child with ASD, causing additional stress on the family as a whole (Rao & Beidel, 2009). Family vacations and outings are sometimes minimized or avoided outright, either to appease their child's need for sameness, or to avoid being in a setting where they cannot control the environment or actions of others. Parents often change their behavior and create strict routines in order to avoid the painful experience of watching their child struggle without structure, removing freedom and spontaneity that they may have once enjoyed. Much needed self-care and respite is also difficult to obtain, as many parents are not comfortable leaving their child with another caregiver.

These additional challenges are all on top of the normative stressors of caring for any child, and understandably, have an impact on parents. On top of the challenges posed by the symptoms inherent to the diagnosis, approximately 70% of children with ASD suffer from comorbid psychiatric disorders (Simonoff et al., 2008), adding yet another potential area of stress for these parents. Just as the normative stressors experienced by all parents do not negate the joys of parenthood, such is the case with parents of children with ASD (Myers et al., 2009)- although this joy often comes at an emotional cost.

Stress in Parents of Children with Autism Spectrum Disorder

Research has consistently demonstrated that parents of children with autism spectrum disorder experience elevated levels of stress when compared to parents of typically developing and developmentally disabled children (e.g. Hayes & Watson, 2013; Silva &

Schalock, 2012; Estes et al., 2013; Donovan, 1988). A recent meta analysis of the research specifically comparing stress in parents of children with ASD to stress in parents of typically developing children and parents of children with developmental disabilities, demonstrated that the effect size for both was large, 1.58 and .64, respectively (Hayes & Watson, 2013). These findings, along with research demonstrating that the majority of parents with a child with autism, estimated at approximately 66% (Tomanik, Harris & Hawkins, 2004) to 70% (Derguy et al., 2016), report significantly elevated stress levels, is concerning.

Early research by Koegel and colleagues (1992) documented that across multiple variables, mothers of children with autism demonstrate a relatively stable stress profile. They found that these mothers endorse high levels of stress concerning their child's future, level of impairment, and ability to function in society. A similar finding identified the three most stressful factors associated with parenting a child with autism as (a) concern about the permanency of the condition, (b) limited acceptance of autistic behaviors by others, and (c) the very low levels of social support received by parents (Sharpley et al., 1997). The stress associated with having a child with autism has also been found to be chronic and persistent over time (Remington et al., 2007; Dyson, 1993). There is an enormous body of literature documenting the heightened levels of stress in this population, which presents concerns for both the parent experiencing these chronic and elevated levels of stress, and also for the child with autism. Research investigating parenting stress in parents of children with ASD has focused on its impact on parental mental health, parenting behaviors, and child outcome.

Parenting Stress: Impact on Mental Health. Research suggests that the difficulties that come with parenting a child with a developmental disability have the potential to negatively impact parental mental health. One common measure utilized to examine mental

health of parents in the literature is level of depressive symptoms, which have repeatedly been found to be elevated in parents of children with autism spectrum disorder (Ingersoll & Hambrick, 2011; Wolf et al., 1989). Specifically, Wolf and colleagues (1989) found that parenting stress accounted for a large portion of elevated dysphoria, or chronic depressive symptoms, in this population. A more recent study found elevated levels of both stress and depressive symptoms in a group of 189 parents of children with ASD (Ingersoll & Hambrick, 2011). In addition to greater stress and depressive symptoms, these parents have also reported lower quality of life when compared to parents of children with other developmental disabilities, physical disabilities, or chronic health conditions (Bouma & Schweitzer, 1990; Mugno et al., 2007; Olsson & Hwang, 2001; Wolf et al., 1989). Montes and Halterman (2007) surveyed a group of 364 parents of children with ASD and found that when compared to mothers of typically developing children, they reported significantly higher levels of stress and poorer mental health. Lovejoy and colleagues (2000) reviewed 46 observational studies investigating the strength of association between parental depression and parenting behavior, finding the strongest association between depression and negative maternal behavior. The review highlighted the impact that depression (one measure of parental mental health) can have on parenting behavior, and consequently, the developing child. Specifically, depressed mothers exhibited significantly higher levels of disengagement and negative parenting behavior, and significantly lower levels of positive parenting behaviors than non-depressed mothers.

Some researchers have also investigated the impact of stress proliferation, or the tendency for an initial stressor to create additional stressors in other areas of life (Benson, 2006), on this population of parents. This more pervasive conceptualization of stress was

found to predict parental depressed mood, and also accounted for additional variance in parental depression above and beyond that explained by child symptom severity on its own (Benson, 2006). A longitudinal replication of this original study found that changes in stress proliferation predicted changes in parental depressed mood, which suggested that a reduction in stress proliferation may ameliorate depression in this population (Benson & Karlof, 2009). These findings highlight the impact of chronic stress on parental mental health, which is concerning not only for the caregiver, but also for the developing child, as parental mental health difficulties such as depression have been found to negatively impact parenting behaviors and child outcome.

Parenting Stress: Impact on Parenting Behaviors. High levels of stress, and thus mental health difficulties, have also been associated with more negative parenting practices in the general population (Baydar et al., 2003). Parenting stress has been associated with more demanding, less responsive and less engaged parenting (Ponnet et al., 2013). Using structural equation modeling, Ponnet and colleagues (2013) found that higher levels of parenting stress resulted in more demanding parenting style, which refers to the use of more parental discipline, parental control, and higher level of demands. These parenting behaviors are in line with Baumrind's authoritarian parenting style (1991), which research has repeatedly demonstrated as being associated with less favorable child outcome (e.g. Amato & Fowler, 2002). While this research focused on typically developing children, it highlights the impact of stress on parenting behavior as well as child outcome.

When looking at parents of children with ASD specifically, research has demonstrated that greater cumulative stress over a two year period is associated with less positive affect and lower dyadic pleasure during parent-child dyadic interactions at the end of

the two year period (Crnic et al., 2005). Similarly, higher levels of stress have been found to be associated with less involvement and lower communication between the parent and their child with ASD (Osborne & Reed, 2010). Research studies that document these associations are careful to acknowledge the impact that having a child who may offer fewer opportunities to engage, or who actively avoids engaging with a parent, may have on parenting behavior. More recently, researchers have found that the use of harsh and punitive parental discipline strategies (negative parenting behaviors) mediates the relationship between parent stress and child disruptive behavior problems (Shawler & Sullivan, 2015). This is supported by research documenting the positive impact of maternal warmth, a positive parenting behavior, on child externalizing behaviors (Midouhas et al., 2013).

Parenting Stress: Impact on Child Outcome. Research has repeatedly documented the negative impact of parent stress on child outcome. One striking study by Osborne and colleagues (2008) demonstrated that parenting stress could diminish and even eliminate the positive effects of intervention for young children with ASD. Using a longitudinal design, the same group found that parenting stress at intake more strongly predicted child behavior problems after 9 months of development than vice versa, again supporting the notion that parenting stress has a large impact on the developing child with autism (Osborne & Reed, 2009). This finding is supported by the early work of Robbins, Dunlap, and Plienis (1991), demonstrating that for families undergoing intensive behavioral therapy, parent stress level at intake is inversely related to the amount of child progress throughout the therapy program. Specifically, they found that higher levels of stress on the Parent Domain of the PSI, or stress related to multiple aspects of parenting rather than stressful child behavior as measured on the Child Domain, was inversely related to child improvement after one year of intervention.

Cumulative parenting stress in a group of parents of children with ASD (over a two year period) was also found to account for over 15% of the variance in reported behavior problems in the child with autism at the end of this time period (Crnic et al., 2005). Additionally, greater cumulative stress over a two-year period accounted for significant variance in child negative behavior during a parent-child dyadic interaction following that time period (Crnic et al., 2005). Taken as a whole, the research suggests that both the child and parent in these dyads are negatively impacted by elevated parenting stress. Kazdin (1995) highlights the notion that “reducing the levels of parenting stress is important not only for improving the psychological health of the parent but also because it may improve the efficacy of interventions that are targeting the child’s behavioral problems.”

Parenting Stress and Child Characteristics. Research has also investigated the relationship between child characteristics and parenting stress in parents of children with autism, repeatedly demonstrating an association between the two (e.g. Davis & Carter, 2008). Child symptom severity and child behavior problems have been the two predictive variables investigated most frequently (Falk, Norris & Quinn, 2014). Studies investigating the relationship between concurrent parental stress and child symptom severity (e.g. Ingersoll & Hambrick, 2011) as well as concurrent parental stress and behavior problems (e.g. Estes et al., 2013) have identified an association between these factors, although they do not necessarily imply causality. Studies looking only at concurrent data tend to infer causality when the nature of the design only identifies an association (Tabachnick & Fidell, 2007), and fails to address a more complex, bidirectional relationship between child behavior and parenting stress. Notably, longitudinal studies have been employed to investigate this bidirectional relationship.

Baker and colleagues (2003) utilized such a design to investigate the bidirectional effect of parenting stress on child behavior problems, and child behavior problems on parenting stress in a large group of individuals with intellectual disability. The group identified that maladaptive child behavior and parenting stress have a mutually escalating effect on one another. Using hierarchical regression, the authors found that child behavior predicted level of parenting stress, and level of parenting stress also predicted child behavior problem. Similarly, Lecavalier and colleagues (2006) found that for a large group of individuals with autism and their parents, parenting stress and child behavior problems exacerbated each other over time, again supporting the bidirectional nature of the relationship between the two. More recently, Zaidman-Zait and colleagues (2013) examined the reciprocal nature of parental stress and child behavior problems in this population. Similarly to Lecavalier and colleagues (2006), the authors found a bidirectional relationship between parenting stress and both internalizing and externalizing child behaviors. These findings point to the importance of taking a systems approach to the support of individuals with autism spectrum disorder, which includes directly supporting parents, while also providing services to the child (see Cridland et al., 2014 for a theoretical rationale for a family systems approach to autism).

Support for Parents

Due to the extensive literature highlighting the elevated levels of stress and mental health difficulties experienced by parents of children with autism, support for these parents has been approached in a few distinct ways. These different realms of support can be categorized as parent training and education, social support, and parent-focused therapeutic support.

Parent Training/Education. Parent training, also referred to as parent education, “broadly refers to programs or trainings designed to provide parents with information or teach them skills” (Schultz et al., 2011, p. 96). Historically, parent stress has been targeted through a variety of parent training programs. The rationale for this approach is that providing parents with skills to work with their child with autism will decrease child behavior problems, and in turn, decrease parental stress. Reduction of parent stress is thus conceived as a “collateral effect” (Koegel et al., 1996), and has been considered secondary to child outcome. This is aptly identified by Intagliata and Doyle (1984) in their discussion of available support for parents as they note that “the common thread that ties most intervention strategies {to support parents} together is that their focus is . . . either directly or indirectly on the developmentally disabled child” (p.4). Nonetheless, research has consistently demonstrated the positive effects of parent education on child outcome (McConnachie & Diggle, 2007). A meta-analysis of parent training programs for parents of children with autism from 1987 to 2007 identified 30 research studies that utilized some form of parent education (Schultz et al. 2011). The authors found that a majority of the studies targeted behavioral or communicative strategies and increased both parent skills and targeted child behavior. In contrast, only 13% of the 30 articles reviewed reported a decrease in parent stress. This may partially be due to the fact that parenting stress has commonly been considered secondary to outcome measures related to the child until more recently.

Parent training for this population has generally focused on teaching parents to implement intervention strategies, which has demonstrated favorable child outcomes, but variable results on parental stress depending on the model utilized (see McConachie & Diggle, 2007 for a review of parent implemented interventions). Brookman-Frazee (2009)

outlined the most common models of parent training for parents of children with ASD, which they categorized as Discrete Trial Training (DTT), Naturalistic (e.g. PRT), Developmental/Behavioral (e.g. Early Start Denver Model), and Cognitive Behavioral (CBT). While the majority of research on parent training programs has focused on child outcome and parent fidelity, a body exists that specifically investigates the impact on parental stress. There is evidence from multiple baseline studies (Koegel, Bimbela & Shreibman, 1996; Smith, Buch & Gamby, 2000) demonstrating that parent-training falling in the Naturalistic category, specifically PRT, may ameliorate child-related parent stress. Koegel and colleagues (1996) demonstrated the collateral effects of parent training on parent-child interaction and parent stress in 3 parents of children with autism. A more recent pilot study, also in the Naturalistic category, demonstrated that training parents in a group format to implement PRT (PRT-Group) with their child produces a modest reduction on parent stress (Minjarez et al., 2013). It is important to note that while 75% of parents in this study reported stress levels at or above the 90th percentile at intake, 58% were still at or above the 90th percentile after intervention. This highlights the need to investigate ways in which we can continue to support for parents of children with autism.

A parent training course entitled “More than Words” was utilized with a group of parents with preschool aged children (24-48 months) with ASD and “aims to facilitate parents' skills in social interaction with their child and to build successful communication through enhancing parents' ability to observe, to engage the child in structured routines (such as action songs with the child), and to use natural opportunities such as household and child-care tasks for joint attention during the day” (McConachie et al., 2005, p. 335). The course, which falls in the naturalistic training category met weekly for a total of 20 hours and also

included 3 home visits per family that provided individual discussion and feedback. While the training had a positive impact on child expressive vocabulary, there was no reduction in parenting stress. Similarly, Fava and colleagues (2011) found that cross setting parent mediated early intervention (intervention implemented in the clinic and at home) produced significant improvements on child autism symptom severity, language acquisition, and adaptive skills, but failed reduce parent stress. In contrast, the control group that included parenting training but did not involve parent-mediated intervention demonstrated a significant reduction in parental stress. This may point to what Stahmer and Pellecchia (2015) aptly identify as the need to “shift from expecting parents to become therapists to helping parents succeed at parenting” (p. 260).

Research suggests that parent training for parents whose child has recently received a diagnosis of ASD can be useful in reducing stress. A study by Keen and colleagues (2010) that focused on parents whose child had recently received an initial diagnosis of autism (within 6 months) found that parent training reduced parenting stress. The training included a two-day parent group workshop, and was followed by 10 individual home sessions in which parents were assisted in implementing strategies they learned in the workshop. Similarly, an intervention entitled Autism 1-2-3 was created for young children (17-36 months) who had just received a diagnosis of autism in Hong Kong (Wong & Kwan, 2010). The intervention included a parent-training component, in which clinicians taught parents strategies to increase eye contact, gestures and vocalizations/words in their children. The authors found significant a reduction in total parenting stress (as measured by the Total score on the PSI) for the parents involved (n=17). This research again highlights the importance of providing

training for parents following an initial diagnosis of autism in order to improve child behavior, but also decrease parenting stress.

Research suggests that parent training may be less effective on child outcome for parents experiencing high level of stress, a category into which most parents of children with autism fall (Robbins, Dunlap & Plienis, 1991). Early research in this area (Plienis, Robbins & Dunlap, 1988) demonstrated that children who made the most improvements over the course of intervention had parents with normative levels of parenting stress (a mean score around the 50th percentile on the Parent Domain of the PSI) prior to parent training. They found that parents with children who showed low levels of improvement had clinical levels of parenting stress (a mean score above 80th percentile on the Parent Domain of the PSI) at intake. While this is not to underestimate the positive effect of parent training on child development, it does highlight the need to expand available therapeutic support to parents, and empirically evaluate strategies explicitly targeting parenting stress above and beyond that associated with the characteristics and behaviors of the child. While parent training can help support parents, especially around the time of initial diagnosis (e.g. Keen et al., 2010), reports of elevated levels of stress persist in those who have received extensive parent training (e.g. Singh et al., 2006; 2014). This combined with research demonstrating that stress related to having a child with autism tends to be chronic and persistent over time (Dyson, 1993), calls for additional support for these parents.

Social Support. Social support may be one way to buffer the negative impact of stressors associated with having a child with autism for these parents. Dunst and colleagues (1986) defined social support as a multidimensional construct that includes physical and instrumental assistance, attitude transmission, resource and information sharing, and

emotional and psychological support. Others have defined social support as formal services from professional and/or loosely structured organizations (Boyd, 2002). As the two definitions suggest, this support can be both formal and informal, but research suggests that parents of children with autism who utilize some form of social support are at reduced risk for stress and mental health problems than parents who do not (Zablotsky et al., 2013).

In general, increased informal social support among caregivers of children with ASD decreases the likelihood of stress and other negative outcomes (Dunn et al., 2001). Benson and colleagues (2006) also found that informal social support reduces stress proliferation and depressive symptoms among caregivers. Similarly, a study of 172 parents of children with autism demonstrated that both fathers and mothers who reported receiving more social support had lower levels of depression, anxiety and anger (Gray & Holden, 1992). Low levels of social support have also been identified as powerful predictors of anxiety and depression in mothers of children with autism (Boyd, 2002). Guralnick and colleagues (2008) looked specifically at the impact of parenting support on parental stress in this population. Their findings demonstrated that higher levels of parenting support, even when controlling for child age, cognitive and language level, behavior problems, and family social status, predicted lower levels of parent-related stress at two year follow up. Social support has also been identified as a moderating variable between stress and dysphoria, thus acting as a buffer against elevated stress on mental health in this population of parents (Wolf et al., 1989). These findings suggest the importance of providing social support for parents of children with autism. Despite research highlighting social support as a potential buffer and/or coping strategy for this population of parents, limited research exists on its use in clinical practice.

Therapeutic Support. While the research on services directed at specifically supporting the psychological needs of parents of individuals with autism is not absent, the literature is limited (Blackledge & Hayes, 2006). After reviewing the literature and recognizing the dearth of research in this area, Banach and colleagues (2010) evaluated a post-diagnosis support group for parents whose children had recently received an initial diagnosis of autism (Banach et al., 2010). Instead of focusing on parenting skills, the authors utilized a model outlined by Barnett and colleagues (2003) focused on supporting parents in the grief process and targeted parent advocacy and self-efficacy in the wake of the diagnosis. Parents in the group demonstrated improvements on all subscales of the Family Empowerment Scale, which supports the additional benefit of providing psychological support to parents.

In a unique study by Blackledge and Hayes (2006), acceptance and commitment training (ACT) was utilized with parents of children with autism. As opposed to many parent training studies, ACT is not focused on child behavior, but instead focuses on acceptance of unpleasant emotions, recognition of thoughts, and clarification of values, as a means to help the client (parent in this case) live a value-driven life. Singer (1993) previously reported that many parents of children with developmental disabilities find therapeutic techniques directed at changing thought patterns (common in cognitive behavioral therapy) as invalidating. In this way, providing parents with a means to cope with the difficulties associated with raising a child with autism is likely to be more helpful, and results of this two-day intensive ACT group support this hypothesis. After attending the group, parents reported decreased levels of depression and symptom severity in general. ACT relies heavily on the use of mindfulness and psychological acceptance (rather than cognitive restructuring), which may be a more

efficacious technique with a group of individuals who have concerns that may be valid and are not likely to disappear quickly (e.g. my child may need support for his entire life).

Psychological acceptance has also been found to be negatively correlated with parent mental health difficulties, and has been found to mediate the relationship between child problem behavior and parental mental health problems (Weiss et al., 2012). The authors suggest “for problems that are chronic and difficult to address, psychological acceptance may be an important factor in coping for parents of young children with ASD” (p. 2).

More recently, Poddar and colleagues (2015) utilized ACT in individual therapy with five parents of children with autism. Results demonstrated that after 10 sessions, parents reported improvements on state anxiety, depression, psychological flexibility and quality of life. Similarly, Kowalkowski (2012) found that an 8-week ACT group for parents of children with ASD reduced parental distress when compared to a treatment as usual group. These studies demonstrate that acceptance based psychotherapy may be useful in helping to support parents of children with autism. This is further supported by research demonstrating that psychological acceptance mediates the role between child behavior problems and maternal depression, anxiety, and stress in parents of children with autism (Jones et al., 2014).

Acceptance is a large portion of mindfulness, which has also been found to significantly mediate the effect of child behavior problems on maternal depression and anxiety (Jones et al., 2014).

Mindfulness

Mindfulness, while its origins come from Buddhism, has growing popularity in clinical practice and is associated with increased life satisfaction, psychological well-being, decreased depression, anxiety and stress, improved emotion regulation, and decreased

experiential avoidance (see Keng, Smoski & Robins, 2011 for a complete review). An emerging body of research also highlights the positive effect of mindfulness on brain function (e.g. Davidson et al., 2003) and structure (e.g. Holzel et al., 2011). A multitude of definitions exist for mindfulness, but a succinct definition by Jon Kabat-Zinn (2003) captures the construct as “the awareness that emerges through paying attention, on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment” (p. 145). Mindfulness can be conceptualized as a concept and a set of practices that provide individuals with a means to contact the present moment, which can consequently provide solace from worries about the future (e.g. “Will my child be okay after I’m gone?”) and ruminations about the past (e.g. “I should have been more diligent about seeking out services for my child”). Due to the normative level of stress that come with parenting in general, practitioners and researchers have begun to incorporate mindfulness in parent training programs for parents in general (Duncan et al., 2009).

Mindful Parenting

Myla and Jon Kabat-Zinn first introduced the concept of mindful parenting in their book, *Everyday Blessings: The Inner Work of Mindful Parenting* (Kabat-Zinn & Kabat-Zinn, 1997). In this work they describe the objective of bringing mindful awareness to daily parenting experiences. Dumas (2005) published a research article on the topic and outlined a mindfulness-based model of parent training. This theoretical model proposed strategies through which parents are able to “lessen the grip of automaticity” in their interactions with their own children. Importantly, Dumas articulately emphasizes that this new model is not to be considered a replacement for behavioral-based parent training, but as a unique and necessary addition to the field. He introduces the model as a means to help parents learn new

coping strategies, and also practice them repeatedly, so that they learn to engage in more effective automatic processes in their parenting role. Duncan and colleagues (2009) followed a few years later with a similar model of mindful parenting, “whereby parents intentionally bring moment-to-moment awareness to the parent–child relationship” (p.255). The authors proposed that mindful parenting involves developing a set of skills focused on listening with full attention, increasing emotional awareness and self-regulation, and bringing compassion and nonjudgmental acceptance to the parent-child interaction.

The model of mindful parenting proposed by Kabat-Zinn and Kabat-Zinn (1997) was initially intended for parents of typically developing children, but has since been implemented with a wide range of parents of children with disruptive or externalizing behaviors (Bogels et al., 2008), caregivers of children with multiple disabilities (Singh et al., 2004), developmental disabilities (Singh et al., 2007) and more recently, autism spectrum disorder (e.g. Ferraioli & Harris, 2013). Results of these investigations have shown that mindfulness training increased endorsements of happiness for the individual with the disability, and reduced externalizing behaviors and child behavior problems (e.g. aggression and noncompliance), even while this was not the explicit target of the training (Singh et al., 2004; 2007). Parents have also reported reductions in stress and improvements in overall well being.

From an ecological framework, it is crucial to provide services to parents that are not only directed at the child’s behavior (e.g. individual or parent-directed behavioral therapy) but also directed at supporting the parent. While skills-based parent training programs provide parents with skills to reduce disruptive behavior in their children, mindful parenting groups may add an additional layer of support, directed specifically at parental well-being. In

fact, research has demonstrated that higher levels of mindful parenting is associated with lower levels of parental distress in this population of parents (Beer et al., 2013), and that increased use of mindful parenting practices correlates with improvements in parent-child interactions (Coatsworth et al., 2010). Similarly, higher levels of mindful parenting among fathers of children with intellectual disability predicted increased levels of engagement with their child (MacDonald & Hastings, 2010). Specifically, fathers who reported being more present with their child were also more involved in the child's care and support. These findings support the exploration of mindfulness-based intervention for parents of children with autism spectrum disorder.

Since research exists for both skills-based, and mindfulness-based parent groups, it is important to first examine whether or not providing mindfulness skills to parents offers support above and beyond traditional skills groups. This hypothesis was tested in a recent study comparing a more traditional parenting group (SFP: Strengthening Families Program), with a version of SFP infused with mindfulness practices (MSFP) for parents of typically developing adolescents (Coatsworth et al., 2010). This RCT demonstrated that the MFSP had comparable effects on child management strategies, but documented stronger effects on mindful-parenting skills and parent-youth relationship quality than the original program. While this study was conducted with a group of parents of typically developing adolescents, Ferraioli and Harris (2013) compared the effects of a traditional skills-based parent training program and a mindfulness-based parenting group for parents of children with autism. Results indicated that the mindfulness group alone demonstrated significant improvements in both parent stress and global health outcomes. More broadly, the authors documented that a

mindfulness-based parent group may provide additional support to a population of parents who experiences extremely high levels of stress.

A group of researchers in the Netherlands have continued to embark on research investigating the impact of mindfulness training on parental stress for parents of children with behavioral difficulties in general. The authors have created a mindfulness program for parents, entitled the Mindful Parenting group (Bogels et al., 2008) that they created for parents who reported experiencing stress related to parenting a child with behavioral difficulties. Children's diagnoses have included Attention Deficit Hyperactivity Disorder (ADHD), Oppositional Defiant Disorder (ODD), Conduct Disorder (CD), ASD, anxiety and depression. Initial studies for this diverse group of parents demonstrated that after 8 weeks of training (compared to a waitlist), reductions were seen in parental stress, child externalizing behavior, and improvements were found in mindful parenting and co-parenting (see Bogels & Restifo, 2013 for a review). A recent study utilized the Mindful Parenting group with parents of adolescents with autism, while the adolescents also received mindfulness training. Results demonstrated positive improvements for both the adolescent and the parent (de Bruin et al., 2014). Research on the effect of mindfulness based parenting programs for parents of children with autism is still in its infancy, and more research is necessary. Prior to the introduction of the current study, a review of the literature will be conducted in order to assess the state of the research in this area.

Literature Review: Mindful Parenting Programs for Parents of Children with ASD

A review of mindful parenting programs in mental health care in general recently highlighted the need for the establishment of programs directed at specific parent populations, as it is unclear for whom specifically these group are most effective (Bogels,

Lehton & Restifo, 2010). A systematic literature review on mindfulness-based parenting programs specifically for parents of children with autism was conducted in order to examine the current state of the literature. Journal articles were identified using the electronic version of PsycInfo and PubMed. The following search terms were used: (autism OR autistic OR asperger OR asd) AND (parent*) AND (mindful*). Studies were reviewed if they also met the following criteria: (1) published in a peer-reviewed journal, (2) offered a mindfulness based parent training program, (3) participants were exclusively parents of children or adolescents with autism spectrum disorder. The original literature search produced a total of 26 abstracts (PsycInfo n=18, PubMed n=8), 6 of which met all inclusion criteria. Most studies were excluded as they did not implement a form of intervention, and/or did not utilize a sample of parents of children/adolescents with autism. The identified articles are reviewed below.

The first group to assess the effectiveness of a mindfulness-based parent training with parents of pre-school aged children with autism examined the effect of such a program on the child's level of aggression, noncompliance, and self-injury (Singh et al., 2006). The authors implemented a 12-week mindfulness course with three parents, in which both the philosophy and practice of mindfulness were taught to parents in a one-on-one format. Participants included three mothers of children with autism (children's ages ranged from 4 year 5 months to 6 years 1 month). All of the parents had previously attended various parent-training programs that focused on teaching language to their children, behavior management, sensory integration, and medication management. After an initial training session, parents received 2-hour training sessions three times a week every three weeks (Monday, Wednesday, Friday in Weeks 3, 6, 9, and 12). In addition, parents were given a copy of a book on mindfulness

(Kabat-Zinn & Kabat-Zinn, 1997) to read in preparation for their training sessions. The authors continued to take data on child behavior 52 weeks after the training sessions ended, during what the authors labeled the “practice” phase. In this phase, parents were asked to practice what they had learned during the training phase. Data was collected on child behavior, with results indicating that for all three children, aggression decreased from baseline to training (percent reduction per child: 16%, 6%, 10%) and also from training to practice (percent reduction per child: 88%, 70%, 85%). For two children, noncompliance was identified as a problem behavior, and both showed a decrease from baseline to training (percent reduction per child: 33%, 11%) and from training to practice (percent reduction per child: 68%, 64%). For the one child who displayed self-injurious behavior, these behaviors decreased from baseline to the end of training (percent reduction: 17%), and from the end of the training, to the end of the practice phase (percent reduction: 51%). In addition, parent’s level of satisfaction with their parenting and with their parent-child interactions increased after training and over time. Thus, Singh and colleagues (2006) demonstrated the feasibility of implementing a mindfulness based parent training in both improving difficult child behavior, as well as increasing mother’s positive perception of their parenting ability.

More recently, the same group of researchers examined the effect of mindfulness-based positive behavior support (MBPBS) training with three parents of adolescents with autism (Singh et al., 2014). The training took place once per week over 8 weeks and focused on teaching both philosophy and practice of mindfulness to parents through individual sessions (n=3). Mindfulness was paired with positive behavioral strategies, which parents were taught to implement with their children (ages ranging from 15-19 years), while maintaining mindful awareness. All parents had previously been taught positive behavioral

strategies, beginning when their children were between the ages of 6 and 8 years, and had substantial support on implementing these practices in the past. The MBPBS training thus focused on implementing these strategies within the context of mindfulness practices. Data was collected on both child and parent behavior and experience before and after the 8-week training, and again after an additional 40 weeks of practice, which consisted of parents practicing the MBPBS on their own. Results demonstrated a large reduction in aggressive and disruptive behavior in all adolescents throughout the training stage, which also sustained over the 40-week practice stage. Compliance with parental request also increased after training, and continued to increase throughout the practice stage. In addition, all mothers demonstrated a decrease in perceived stress (as measured by the Perceived Stress Scale; PSS-10) after training, and also demonstrated a further decrease in stress after completion of the 40-week practice stage. These results indicate that providing parents with coping strategies based on mindfulness have the ability to decrease both parent stress and disruptive child behavior for a group of parents who had received skills training in the past. This provides evidence for the utility of the addition of mindfulness training to support this population of parents.

Hwang and colleagues (2015) utilized a different approach, coaching parents to teach mindfulness exercises to their child with autism. Six dyads of mothers and their child with autism (ages 8-15 years) participated in the study, which was comprised of two stages. The first stage (parent mindfulness training phase) introduced parents to mindfulness philosophy and practice in a group setting, which met for 2 ½ hours weekly, for 8 weeks. The second phase focused on parents teaching their children the strategies they had learned (parent-mediated mindfulness phase). Results demonstrated a reduction in parenting stress, along

with reduction in child thought and anxiety difficulties after the parent mindfulness training phase. Further reduction of anxiety and thought problems were reported for the children after the parent-mediated mindfulness phase. The authors reported that after the completion of the study, most parents noted that maintaining their own mindfulness practice became increasingly more difficult once they began teaching their children, and suggested that continued face-to-face group meetings would have been useful to them. This feedback provides valuable information about the potential benefits of utilizing a group format, with qualitative data indicating that a group format would be preferential to many parents.

Researchers at Rutgers University compared the effects of a more traditional skills-based parenting group (SBPG), and mindfulness-based parenting group (MBPG) for parents of children with autism (Ferraioli & Harris, 2013). The skills-based parent training was based on behavioral- and curriculum-based intervention manuals for working with children with ASD, and focused on teaching parents how to implement behavioral strategies to effect behavior change in their children. The mindfulness-based parent training was based on content from the skills manual for Dialectical Behavior Therapy (DBT: Linehan et al., 1993), and the manual on Mindfulness Based Cognitive Therapy for depression (Segal et al., 2002). Fifteen parents were randomly assigned to one of the two groups (MBPG $n=6$; SBPG $n=9$), which both met for two hours per week, and included weekly homework assignment. Both groups ran for 8 weeks. Results indicated that only those parents in the mindfulness-based group demonstrated reduction in parent stress (PSI-SF), and an increase in general health (GHQ). As mentioned previously, this research design demonstrates an additional benefit of parent support in the form of mindfulness for this population.

In the largest study of its kind, 243 mothers of children (ages ranging from 2-54 years) with developmental disabilities (65% with autism and 35% with other developmental disabilities) were randomly assigned to Mindfulness Based Stress Reduction (MBSR; mindfulness program created by Jon Kabat-Zin) or Positive Adult Development (PAD; positive psychology practice) groups (Dykens et al., 2014). Both groups met weekly (1.5 hours) for 6 weeks and were lead by supervised, well-trained peer mentors. Results indicated that while both groups produced reductions in parent distress, parents in the MBSR group demonstrated significantly greater improvements in depression, anxiety, sleep, and life satisfaction, than those in the PAD group. While the majority of parents in this group had children with autism, the authors investigated whether child diagnosis had an impact on outcome, noting no difference between diagnostic groups except for rate of improvement on anxiety symptoms in the parents of children with autism. It is important to note that traditionally, the MBSR course is 8 weeks in length, meets for 3 hours per week and includes one day long retreat. The authors documented that for this highly stressed group of parents, modifying the course to fit their busy schedules (1.5 hours per week for 6 weeks), still documented significant improvements.

A recent study utilized a combination intervention package, delivering mindfulness training to both adolescents with autism and their parents (de Bruin et al., 2014). A total of 23 adolescents participated and received 9 weekly sessions of mindfulness training provided in a group format. The training was based on MyMind, a standardized protocol created for adolescents with Attention Deficit Hyperactivity Disorder (ADHD). The training was tailored to the specific needs of adolescents with autism, and focused on teaching adolescents to increase and enhance their attention, body awareness and self-control by practicing

mindfulness exercises (most exercises coming from the MBSR or MBCT curriculum). The adolescents' parents (n=18 mothers; n=11 fathers) participated in a parallel Mindful Parenting group, which followed the curriculum outlined by Bogels and Restifo (2013). The group met weekly for 8 weeks for 90 minutes, and ended with a ninth session in which parents and adolescents meditated together. Results indicated that adolescents reported increased quality of life and decreased rumination at both post-test and follow-up. No significant changes were reported for worrying, core ASD symptoms or mindfulness. Parents reported that adolescents demonstrated increased social responsiveness after the training. Parent report measures documented that at follow up, parents had increased levels of mindfulness (in general and in parenting), decreased levels of stress, and slight increases in quality of life, as well as a slight reduction in dysfunctional parenting styles. Importantly, the authors reported on feasibility, documenting that on average, adolescents and parents attended 90% of sessions, with only one adolescent, two mothers, and one family (a mother and her child) drop out. This was the first study to utilize the Mindful Parenting curriculum specifically with parents of individuals with autism, yet the addition of the mindfulness for adolescents does not allow the reader to disentangle the effect of each component (e.g. parent or adolescent mindfulness training). In addition, it was only implemented with parents of adolescents, and thus does not address the question of whether this approach would work for a wide range of parents with a child on the autism spectrum.

After reviewing the existing literature of mindfulness-based interventions for parents of individuals with autism, it appears promising that teaching mindfulness to this population may lead to both decreased stress in parents, and improvements in child behavior. Many of the studies reviewed above have aimed to teach mindfulness skills on the individual level. As

of yet, limited research exists that utilizes mindfulness practices to specifically support parents of children with autism spectrum disorder in a group setting. The use of a group format would likely provide an additional layer of social support to parents. Studies utilizing the group format have included parents of children with developmental disabilities in general (e.g. Dykens et al., 2014) or have included small sample sizes (e.g. Ferraioli & Harris $n=6$ in the MBPG). In addition, many of the studies reported do not have an easily accessible and widely distributable curriculum that would make replication of these groups possible in the community. The current study would be the first to utilize the Mindful Parenting group curriculum with parents of children (under the age of 18 years) with autism spectrum disorder. In addition, the current study will utilize shorter sessions (90 minutes) in order to make the group more accessible to working parents. Results of the proposed study would increase our understanding of the efficacy of this more streamlined version of a group-implemented, mindfulness based intervention for this population of parents.

Specific Aims

The current study aims to extend this line of research, by specifically examining the effect of the Mindful Parenting program for parents of children with autism (under 18 years of age), in a group format. By implementing the 8-week Mindful Parenting course with this population of parents, the study aims to answer the following primary research questions:

1. Will parents of children with autism demonstrate increased levels of self-reported mindfulness after participation in the Mindful Parenting group?
2. Will parents of children with autism demonstrate reductions in endorsed levels of parent stress after completing the Mindful Parenting program?

3. Will participation in the Mindful Parenting group increase positive parent-child interaction?

Method

Participants

Participants were self-identified parents of a child with an ASD diagnosis. Inclusion criteria included (a) having a child under 18 years of age with a formal diagnosis of ASD and (b) having received child intervention services prior to participation in the group. Participants were recruited from several sources, including the identification of past and current clients of the university autism center, community referrals, and response to emails, flyers and other sources (e.g. Facebook, webpages, etc.).

Thirty parents attended an intake session and consented to participate in the current study. Of these parents, 23 completed the group (80%). Of the seven parents who did not complete the group, 5 withdrew due to competing family obligations, one due to a pending divorce, and one due to chronic illness. Data was used from parents who attended more than half of the group sessions (5 or more), leaving 21 parents for whom data will be used. The two participants who completed the group but were unable to attend more than half of the sessions had inconsistent attendance due to a fluctuating work schedule and repeated illness. Their data was not used in the forthcoming analyses. On average, parents attended 6.8 of the 8 group meetings. All parents had at least one child under the age of 18 years with a formal diagnosis of autism spectrum disorder at intake. In addition, all parents reported having received some form of behavioral intervention for their child (either child or parent directed) prior to participation in the current study. Of the parents who participated, 57.14% participated with their parenting partner. Complete demographic data is displayed in Table 1.

Table 1

Mean Demographic Variables for Participants and Their Child with ASD

Parents	<i>N</i> =21
Age (mean)	42.81
Sex	<i>n</i> (%)
Female	15 (71.4%)
Male	6 (28.6%)
Race/Ethnicity	<i>n</i> (%)
White	16 (85.7%)
Native Hawaiian	1 (4.8%)
Mixed	2 (9.5%)
Latino/a	2 (9.5%)
Child with ASD	
Age (mean)	9.50
Age at DX (mean)	5.92
Sex	<i>n</i> (%)
Female	2 (9.5%)
Male	19 (90.5%)
SRS Total T (mean)	74.81

Research Design

The current study utilized a within-subjects repeated measures design to investigate the effect of the Mindful Parenting Group on parent's level of mindfulness and stress, and parent-child interaction over time. In a repeated measure design, data is collected at multiple time points for each participant. A within-subjects design has the advantage of increasing power as it minimizes error variance due to individual differences, as subjects serve as their own control (Park et al., 2009). It also has the advantage of requiring fewer participants, and can document an effect over time. A repeated measure design was chosen as it is considered more powerful and less vulnerable to threats of internal validity than the pre-test post-test design (Campbell & Stanley, 1966). The addition of multiple time points allows for more detailed documentation of change over time. It also allows for the investigation of when change occurs over the course of treatment.

Setting. The Mindful Parenting groups were implemented at the University of California, Santa Barbara (UCSB) Koegel Autism Center. The initial intake evaluations were administered in clinic rooms, equipped with comfortable couches, tables and clipboards for completion of the questionnaires. The Mindful Parenting group sessions were held in a larger meeting room in the Koegel Autism Center, which was set up with multiple couches and chairs set in a large circle.

Measures

An in house intake questionnaire was utilized in order to obtain demographic and contact information for the participants. This included date of birth, race/ethnicity, previous intervention and parent training, and previous experience in parent support groups. A social validity scale was also administered to parents at the completion of the study in order to

capture parent's qualitative experience of participating in the group. This scale was taken from the curriculum outlined by Bogels and Restifo (2013).

Dependent measures for the current study included parent report survey measures looking at mindfulness, parent stress, and the parent-child relationship. Additionally, a parent report measure of their child's level of social responsivity (Social Responsiveness Scale; SRS) was utilized to quantify level of social impairment. A parent report measure evaluating level of depressive symptoms (Center for Epidemiological Studies Depression Scale; CESD) was also implemented to better characterize the group of parents.

Five Facet Mindfulness Questionnaire (FFMQ). The FFMQ (Baer et al., 2006) was utilized to evaluate parent's overall level of mindfulness. The FFMQ was created as a result of a factor analysis of five independent and commonly used mindfulness scales, as a means to identify the core facets of mindfulness. The analysis yielded five factors of mindfulness that represent elements of the construct as it is currently conceptualized. The scale has five subscales, corresponding to the five facets of mindfulness identified by the analysis, including 1) observation, 2) description, 3) acting with awareness, 4) nonjudgmental attitude and 4) non-reactivity. Internal consistency was reported as ranging from adequate to good (.72 to .92), except for the non-reactivity subscale (.67), which falls in the acceptable range (Baer et al., 2008). The authors also found that four of the five subscales were significantly and positively correlated with mindfulness meditation experience (Baer et al., 2008), demonstrating the scales strong construct validity.

Parent Stress Index, Fourth Edition (PSI) The proposed study will utilize the PSI (Abidin, 1990) to assess stress related to parenting. The PSI is a 101 item self report measure on which parent's rate their response on a 5 point scale, from Strongly Disagree (1) to

Strongly Agree (5), with higher scores indicating more stress. The PSI consists of both Parent Domain and Child Domain subscales. The PSI also yields a Total Stress Index, which indicates the overall amount of parenting stress experienced in the parenting role. Reliability coefficients for the Parent and Child domains and the Total Stress scale are reported as .96 or greater, indicating a high degree of internal consistency. Test-retest reliability has also been reported for the PSI: .82 for the Parent Domain and .72 for the Child Domain (Loyd & Abidin, 1985). Research has also demonstrated that PSI predicts observed stressful behavior in parents (LaFreniere & Dumas, 1995). As the current study proposes to use the PSI in a sample of parents with autism, it is useful that the measure has commonly been used with this population in the past (e.g. Tomanik, Harris & Hawking, 2004). As the PSI is limited to parents of children up to age 12 years, the current study will utilize raw scores as the research question is about overall change, rather than making comparisons to normative groups.

Parenting Relationship Questionnaire (PRQ). The PRQ is a self-report measure designed to capture parent's perspective of the parent-child relationship (Kampaus & Reynolds, 2006). The PRQ has both a Preschool (PRQ-P) and a Child/Adolescent (PRQ-CA) record form, both yielding six subscales, including Attachment, Communication, Discipline Practices, Involvement, Parenting Confidence, Satisfaction with School, and Relational Frustration. The attachment subscale, which reflects the parent's level of attachment to the child, as revealed through the parents feeling of closeness, empathy and understanding of their child is of particular interest to the current study. In addition, the Relational Frustration subscale, which assesses the parent's level of distress in relating to their child, along with the tendency to overreact and become frustrated in common parenting situations is of interest. Internal consistency for the PRQ-P ranges from .76 to .86, and the PRQ-CA ranges from .78

to .93. Test-retest reliability ranges from .75 to .89 for the PRQ-P, and from .75 to .81 for the PRQ-CA across subscales.

The Social Responsiveness Scale, Second Edition (SRS-2). The SRS (Constantino et al., 2003) will be utilized as a measure of autism symptom severity of the identified child with autism. The SRS is a 65-item parent report measure, on which parents indicate on a likert scale the degree to which each items describe their child's behavior in the past 6 months. The SRS generates scale scores for five symptom domains (social awareness, social cognition, social communication, social motivation, and autistic mannerisms), in addition to a total score that serves as an index of symptom severity. Higher scores indicate greater severity of social impairment. Duvekot and colleagues (2015) demonstrated that parent-reported scores on the SRS are highly related to ADOS classification scores, and thus supports the measure as both a valid screening tool, as well as provides evidence of the scale's strong construct validity.

Center for Epidemiological Studies Depression Scale (CES-D). The 20-item CES-D (Radloff, 1977) will be used to assess depressive symptoms in participants. Respondents indicate how often they have experienced each depressive symptom over the previous week on a four-point scale. Internal consistency is reported as .85 for the general population and .90 for clinical samples (Radloff, 1977). Although test-retest reliability is not expected to be high, as the measure asks about depressive symptoms over the past week and these are likely to fluctuate, test-retest reliability ranging from .45 to .70 has been reported. Additionally, CES-D scores of clinical patients correlated (.56) with nurse severity ratings of depression, demonstrating the scale's strong construct validity. The CES-D has been used in a wide range of research in general and clinical adult populations.

Procedure

Parents who indicated interest in participating in the current study were scheduled for individual intake appointments to determine eligibility, obtain written consent, and complete baseline questionnaires. Parents who met inclusion criteria were then assigned to the next available group, which started within one week of the intake appointment.

Intake Appointment. Parents were asked to come to the UCSB Koegel Autism Center for an intake appointment after indicating interest in participating. A trained graduate student researcher (AV) provided additional information about the group, answered any questions the parents had, and completed the informed consent process once the parent has indicated their desire to participate. After the consent process, parents were asked to fill out an intake packet and complete a number of questionnaires (PSI, FFMQ, PRQ, SRS, CES-D).

Mindful Parenting Group. After completing the intake, all parents were assigned to the next available group. Three separate groups were conducted; two started in September of 2015, and one started in February of 2016. The groups were held on either Tuesday or Wednesday evenings and lasted 90 minutes. The length of each group was reduced from 120 minutes to 90 minutes in order to make the group more accessible to parents with limited time availability. Multiple studies that were reviewed above reported using shorter sessions (e.g. de Bruin et al., 2014) with favorable outcomes. In addition, a review of MBSR programs of different lengths found that there was not a significant correlation between mean hours of the class and effect size, suggesting benefits of reduced class time (Carmody & Baer, 2009).

The curriculum for the weekly sessions is outlined in detail by Bogels & Restifo (2013). Briefly, the sessions covered the following topics in sequential order: automatic pilot

parenting, beginners mind parenting, reconnecting with the body as a parent, responding versus reacting to parenting stress, parenting patterns and schemas, conflict and parenting, love and limits, and lastly, a mindful path through parenting.

General session format. The format for each session included an informal check in and review of the previous week's home practice, formal practice of mindfulness exercises, imagination exercises focused on the application of mindfulness skills to parenting, small break out and large group discussions. At the end of each session, parents were assigned home practice based on the theme of the session. Home practice was assigned based on the outlined curriculum (Bogels & Restifo, 2013).

The informal check in and review of the parent's home practice generally took place in pairs in order to provide parents time to connect with fellow group members and gain comfort in discussing their experiences over the past week. These smaller discussions were then followed by a group discussion in which all members were able to share with one another. Thee group discussions provided parents with a space to discuss any challenges and successes they had in practicing mindfulness activities at home.

The formal mindfulness exercise in each session is based on the MBSR curriculum, which offers a different exercise to focus on each week. The succession of formal practice starts with a body scan, moves to a sitting and seeing meditation, then introduces focus on the breath, mindful yoga, walking meditation, and lastly, meditation on loving-kindness. The formal practice in each session ranges from 15 to 30 minutes and is followed by a discussion. Parents are offered space to discuss their experiences, ask questions, and support one another.

Following the formal practice is a parenting exercise based on the theme of the session. These exercises help to illustrate the effect of stress on parent behavior and identify

patterns of reactivity to stress during parenting activities. The exercises generally begin with guided imagery, allowing parents to reflect on their response to stress, and then typically offer an alternative response or way of engaging with stressors. These guided meditations are followed by small and large group discussions, and occasionally a role-play. Lastly, the final 5 minutes of the session are devoted to explanation of the following week's home practice. The home practice include both formal, longer meditation practices, as well as shorter practices that take place informally throughout the day, such as mindfulness of daily routines or the 3-minute breathing space. The parents were provided with audio recordings to help with the formal home practice. Parents were also provided with a packet each week that outlined the home practice and provided additional information on the week's topic. These materials were taken directly from the curriculum outlined by Bogels and Restifo (2013).

Session topics. Session 1 focused on providing basic psychoeducation on mindfulness, how it can be applied to parenting, and why it might benefit the participants. Parents were introduced to their first mindfulness exercise and were given the opportunity to interact with other group members and share about their children and hopes for the group. Session 2 focused on taking a non-judgmental and “beginners” mind approach to parenting activities. The mindfulness exercise had parents practice bringing nonjudgmental and curious attention to their bodies (body scan) as a means to expand their experience of themselves, and ultimately their child. Session 3 focused on helping parents to use the body as a tool to connect with the present moment in the face of parenting stressors. Parents were taught the utility of bringing awareness to the body during times of stress in order to disrupt automatic reactivity to stress that are not beneficial to their child and to themselves (e.g. yelling, self-criticism). Session 4 revisited the topic of using mindful awareness to identify reactivity in

parenting, specifically examining the power of thoughts as automatic reaction to stressors that ultimately exacerbate stress and suffering. Participants were taught, and practiced how using contact with the present moment and self-compassion can provide them with space to choose how they respond to stressful situations.

Session 5 provided parents with an opportunity to explore patterns of parenting styles in their families, and also explore why certain child behaviors might trigger such intense reactions from them. Internalized child and parent schemas are brought to awareness in order to create space, and ultimately slow down reactivity. Session 6 addressed conflict and parenting and provided education on the value of repairing with children after a rupture. Parents were provided with an explanation of the way in which mindfulness can help them to get to a more empathetic state so they are able to take their child's perspective and effectively repair after a rupture in their relationship. They were also given an opportunity to practice. Session 7 addressed both loving kindness and limit setting within the parenting role. Parents were introduced to the possibility of meeting their suffering with kindness and compassion rather than self-criticism in both discussion form and in practice. An exploration of parents' relationship with limit setting was also explored. The group was able to discuss and practice how understanding one's own limits can help parents set effective limits for children, and how mindfulness can support this process. Lastly, session 8 provided an opportunity for parents to review what they have learned over the course, and gave parents a chance to set a plan for their future practice. Parents are asked to share their experience of the group with one another by bringing an object that their represents their journey through the course. Parents were reminded about the follow up session and given a chance to create goals for themselves based on what they had found most useful from the group.

The follow up session occurred 5 weeks after session 8 and provided space for parents to discuss their experience without the regular group meeting with one another, and practice a mindfulness exercise. Appendix A provides a detailed outline of the curriculum, which is based heavily on the MBSR curriculum. MBSR has a large body of empirical support for reducing stress and increasing quality of life for a wide range of clinical and non-clinical participants (see Grossman et al., 2004 and Chiesa & Serretti, 2009 for comprehensive reviews).

Data Collection. Data was collected at four distinct time points: once at intake, after week 4, after week 8, and again at follow-up (after a 5 week break). Parents completed the questionnaires after session, unless they were absent or unable to stay late. In those cases, parents completed the questionnaires at home prior to the following session. Those parents who were unable to attend the follow up session were sent the questionnaires by mail and were provided pre-addressed and stamped envelopes in order to increase ease of returning them to the Koegel Autism Center.

Data Screening and Analysis Plan

Power Analysis. An a priori power analysis was conducted using G*Power 3.1.5 (Faul et al., 2007) in order to determine the sample size required to perform the primary analyses of the current study. For the repeated measures ANOVA, setting the number of groups at 1, number of measurements at 4, correlation among repeated measures at 0.6, and effect size at $f = .28$ resulted in a required sample size of 16 participants. The study's sample size of 21 should therefore have adequate power to detect medium effects using a rANOVA with at least 16 participants. An a priori power analysis was conducted again but with the number of measurements set at 3, as it was anticipated that retaining all data points at follow

might be difficult. This resulted in a required sample size of 18 participants for rANOVAs with only three measurement points. As the rANOVA requires that each participant have data at each time point in order to include them in the analyses, the number of data points available for each rANOVA varied (see Table 1). Two of the analyses with four time points may be underpowered.

Table 1

Number of participants in each rANOVA analysis

	3 Time Points	4 Time Points
PSI	20	16
FFMQ	20	16
PRQ RF	18	14
PRQ A	18	14

The effect size was set at $d = .55$ (converted to $f = .28$ as f is the measure utilized by G*Power) due to the following findings. Altmaier and Maloney (2007) utilized the Mindful Parenting Program with a group of recently divorced parents. Results indicated that the effect size for the PSI was favorable, at $d = .55$. While this study utilized a similar intervention, the participant population was not similar to ours. Bogels and colleagues (2013) utilized the Mindful Parenting Program with parents of a diverse group of children, with the primary diagnosis being ADDH (48%), ASD (21%) and anxiety (7%). This population is more similar to that of the current study, and reported an effect size of .44 from pre to post intervention for the Dutch version of the PSI. Lastly, Ferraioli and Harris (2013) utilized mindfulness with parents of children with autism, and utilized the PSI, reporting an effect size of 2.03. Although this study utilized a slightly different parenting group, it focused on teaching parents mindfulness philosophy and practice. The resulting effect size suggests that

when looking at the effect of a mindfulness-based parent training for parents with autism specifically, the magnitude of change in parent stress may be quite large. Due to these findings, we are confident in estimating an effect size of $d=.55$, which is considered conservative. The correlation among repeated measures was set at .6 based on the test-retest reliability of the PSI, which have been reported as quite high at .82 for the Parent Domain and .72 for the Child Domain (Lloyd & Abidin, 1985). A more conservative estimate of .6 was utilized in order to ensure an adequate sample size.

Preliminary Data Screening. Prior to all data analyses, preliminary data screening was performed for all dependent variables. This included screening for outliers and assessing for normality of the distributions.

Data Analysis Plan. To address the primary research questions, repeated measures ANOVAs (rANOVA) were used to assess change in parent's level of mindfulness (FFMQ Total) and stress (PSI Total), and parent-child interaction (PRQ Relational Frustration and Attachment subscales) over time. A repeated measures ANOVA, also referred to as a within-subject ANOVA, is utilized to detect overall differences between related means and provides information about whether or not there was a significant change over time. Unlike the one way ANOVA, the repeated measures ANOVA is utilized for dependent, rather than independent groups. Simple contrasts were reported when a significant effect was observed in the overall within subject contrast. These contrasts were obtained between intake scores and each subsequent time point, and allow us to assess when change occurred over the course of the group.

A growing body of research suggests that experimental studies rely too heavily on p -values alone (Sullivan & Feinn, 2012; Wasserstein & Lazzar, 2016), as significance level

does not indicate any information about the magnitude of the effect of an intervention (Wasserstein & Lazzar, 2016). Thus, the effect size was calculated for each rANOVA in order to assess the size of the effect of the Mindful Parenting group on each outcome variable. The eta-squared results from the rANOVAs were utilized to calculate Cohen's *d*, as Cohen's *d* allows us to assess the amount of change in standard deviation units. According to Cohen (1988) a large effect size refers to a Cohen's *d* of .8 or greater, while a medium effect size refers to a Cohen's *d* of $.5 \geq .79$. As "reporting observed effect size, along with exact *p* values, allows readers as well as researchers to evaluate the biological importance (and statistical significance) of results," (Nakagawa, 2004, p. 1045) exact *p*-values will be provided.

The original data analysis plan included a follow up data point, which was added as a means to gain a clearer indication of how the Mindful Parenting group operates over time. Because a smaller proportion of the full participant pool was able to attend the follow up session and complete the assessments, 4 data points were lost at follow up. As the required sample size was 16, two of the rANOVA analyses (PRQ A and PRQ RF) were underpowered. Thus, in order to maximize the number of data points and investigate the impact of the group on the entire participant pool, the repeated measure analyses were also completed using the data from the first three time points only (pre, mid and post). All rANOVA analyses with three time points had adequate sample size to detect medium effects.

Results

Descriptive Statistics

The final sample consisted of 21 parents, although data for each variable fluctuates due to missing data at different time points (see Table 1). Descriptive statistics included in Table 3 depict mean, range and standard deviation for the dependent variables at each time point. In addition, the mean, range and standard deviation for SRS and CES-D are displayed. A description of the distribution of each variable (kurtosis and skewness) is also included. No variables presented as violating assumptions of normality, as West and colleagues (1995) indicate as skew > 2 and kurtosis > 7 .

Table 3*Descriptive Statistics of all Variables*

	N	Range	Min	Max	Mean	SD	Skew	Kurtosis
SRS Total T	21	32	58	90	74.81	10.68	0.16	-1.51
CESD Total	21	35	0	35	14.52	11.03	0.75	-0.46
PSI								
Pre Total	21	231	166	397	284.05	63.32	0.08	-0.32
Mid Total	21	188	185	373	283.57	56.09	-0.17	-0.82
Post Total	20	218	161	379	261.55	58.80	0.26	-0.48
F/U Total	16	218	141	359	262.13	60.41	-0.72	0.26
FFMQ								
Pre Total	21	62	105	167	135.38	19.31	-0.20	-1.09
Mid Total	21	64	95	159	131.52	16.80	-0.15	-0.51
Post Total	20	64	108	172	141.20	16.94	-0.07	-0.68
F/U Total	16	68	108	176	135.38	17.96	0.86	0.24
PRQ RF								
Pre	18	21	3	24	13.72	5.00	-0.27	0.52
Mid	18	23	3	26	14.83	4.71	-0.07	2.74
Post	18	17	3	20	12.89	3.36	-1.02	4.54
F/U	14	19	2	21	12.79	4.35	-0.64	2.69
PRQ Attach								
Pre	18	15	11	26	19.67	4.79	-0.57	-0.78
Mid	18	16	11	27	19.56	4.62	-0.45	-0.23
Post	18	20	11	31	20.61	5.69	-0.16	-0.75
F/U	14	17	11	28	20.07	4.84	-0.11	0.06

Primary Analyses

Data Screening. Assumptions of the rANOVA include normality of the distribution and sphericity. In order to assess for normality of distribution, histograms and boxplots were examined for each outcome measure. All histograms indicated approximately normal distributions or slightly positively/negatively skewed. This was confirmed by the examination of the skewness and kurtosis of each variable. The majority of boxplots did not indicate any outliers, however seven outliers were identified. All seven outliers related back to four participant's scores on the Relational Frustration and Attachment subscales of the PRQ across time points. Specifically, one participant was identified as an outlier on the Mid, Post and Follow Up PRQ Relational Frustration boxplots, and one was identified on the Follow Up PRQ Relational Frustration boxplot. The remaining three outliers were found in the Mid and Follow Up PRQ Attachment boxplots. Upon investigation into each outlier, it was determined that all outliers were not due to error, but rather valid variation in the construct. Additionally, the outliers did not impact normality of the distributions of which they were a part. In order to assess for any noteworthy changes that might occur when the outliers are excluded, these analyses (PRQA and PRQ RF rANOVAs), were performed first with all scores, and subsequently with the removal of the relevant outliers. There were no changes in resulting level of significance. Thus, the results reported will include all data points.

Sphericity was evaluated using Mauchley's Test of Sphericity. The assumption was met for all analyses run, as indicated by a non-significant p -value on Mauchley's test, except for the PRQ Relational Frustration and Attachment rANOVAs with all four times points. The assumption of sphericity was violated, as indicated by a significant p -value on Mauchley's

test. In order to determine which adjustment to use, the epsilon term was investigated, which provides the researcher with two options. The epsilon term is a measure of the degree to which the data violates sphericity. If the epsilon term is less than .75, then a Greenhouse-Geisser adjustment can be used (Greenhouse & Geisser, 1959). If the epsilon term is greater than .75, a Huynh-Feldt adjustment should be used (Huynh & Feldt, 1976). Both adjustments essentially decrease the chance of making a Type I error, as each technique makes downward adjustments to the degrees of freedom that in turn, creates a more conservative test of significance. In the current study, the Greenhouse-Geisser adjustment was used for both sets of analyses as the epsilon terms were below .75.

Repeated Measures Analyses and Effect Sizes: All four time points.

PSI. A repeated-measures analysis of variance revealed that mean parenting stress changed significantly over the course of the mindful parenting group, $F(3,45) = 3.30, p = .03$. Simple contrasts indicated significant change from intake to post assessment ($p = .03$). No significant changes were noted from intake to mid or follow up assessment. Figure 1 depicts the mean PSI total scores over time. The means and standard deviations are shown in Table 3. A large effect size was found for parenting stress ($d = 0.94$).

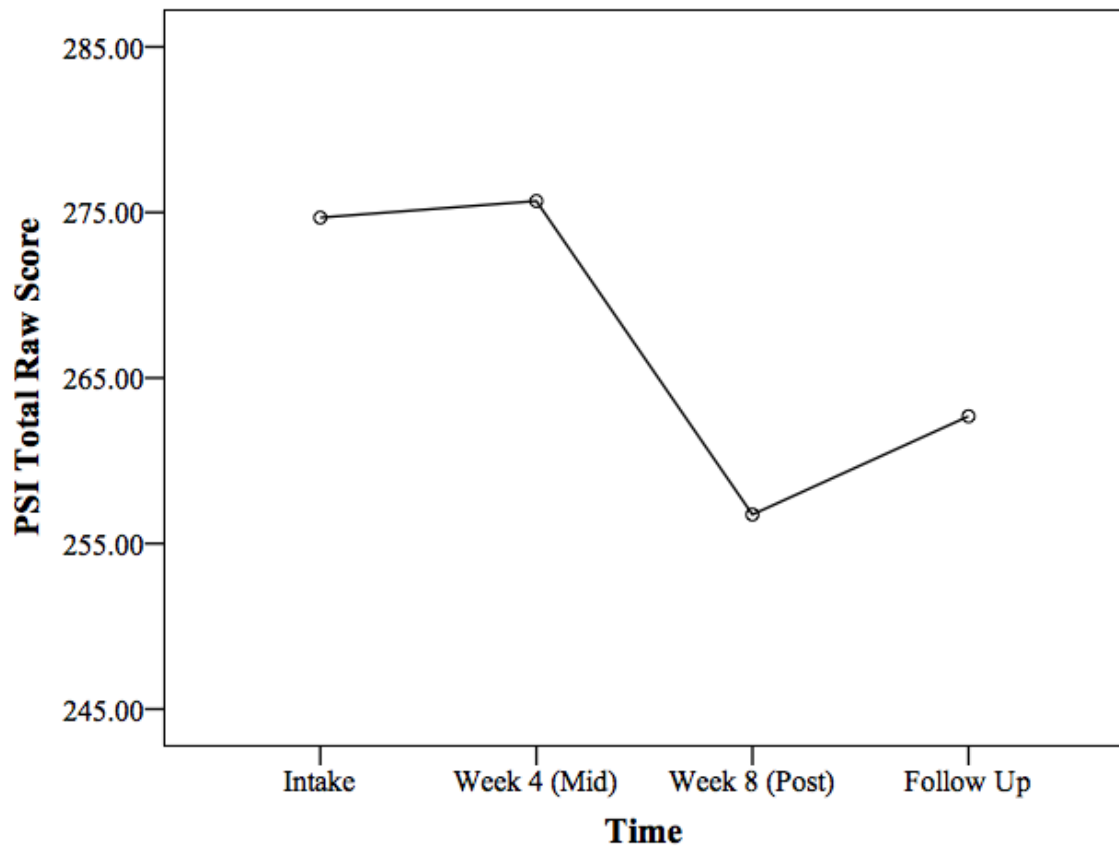


Figure 1: Results of repeated measures ANOVA for overall parenting stress (PSI).

FFMQ. A repeated-measures analysis of variance revealed that overall mindfulness did not differ at significant level over the course of the mindful parenting group, $F(3,45) = 1.90, p = .08$. The means and standard deviations are shown in Table 3. The means of the FFMQ are displayed graphically in Figure 2. A large effect size was for parent's level of mindfulness ($d = 0.81$)

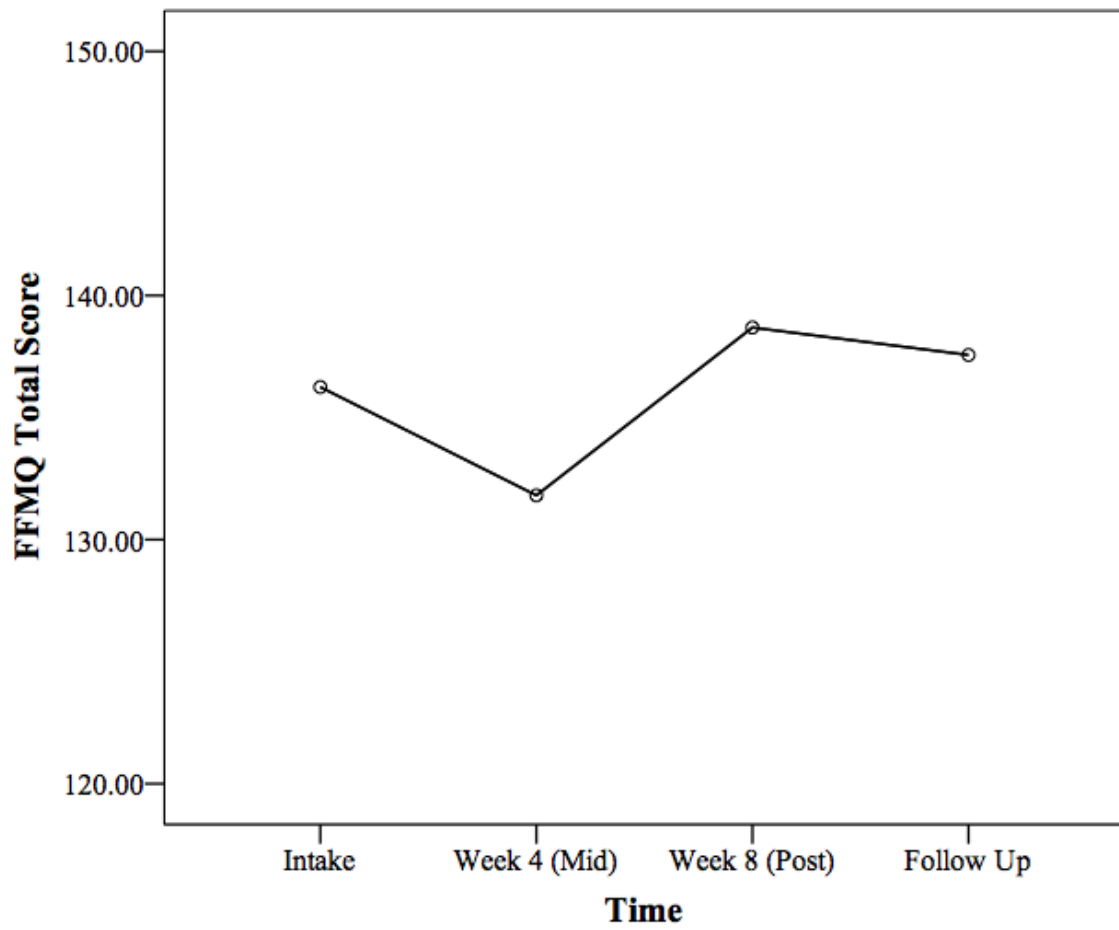


Figure 2: Results of repeated measures ANOVA for overall mindfulness (FFMQ).

PRQ. A repeated-measures ANOVA with a Greenhouse-Geisser adjustment revealed that relational frustration (PRQ Relational Frustration) did not differ at the significant level over the course of the mindful parenting group, $F(1.7, 22.13) = 2.63, p = .10$. A large effect size was found for relational frustration ($d = 0.91$). Similarly, there was not a significant change on level of attachment (PRQ Attachment) over the course of the group, as determined by a repeated-measures ANOVA with a Greenhouse-Geisser adjustment, $F(2.0, 26.5) = 1.19, p = .32$. An intermediate effect size, which corresponds to a Cohen's d of .5 or larger, was found for attachment ($d = 0.61$). The means and standard deviations are shown in Table 3. The means at each time point are displayed graphically in Figures 3 and 4. Please see Table 4 for both the calculated effect sizes and exact p -values obtained from each rANOVA.

Table 4

rANOVA Results: 4 Time Points

	<u>p-value</u>	<u>Cohen's d</u>
PSI	0.03	0.94
FFMQ	0.08	0.81
PRQ RF	0.10	0.91
PRQ A	0.32	0.61

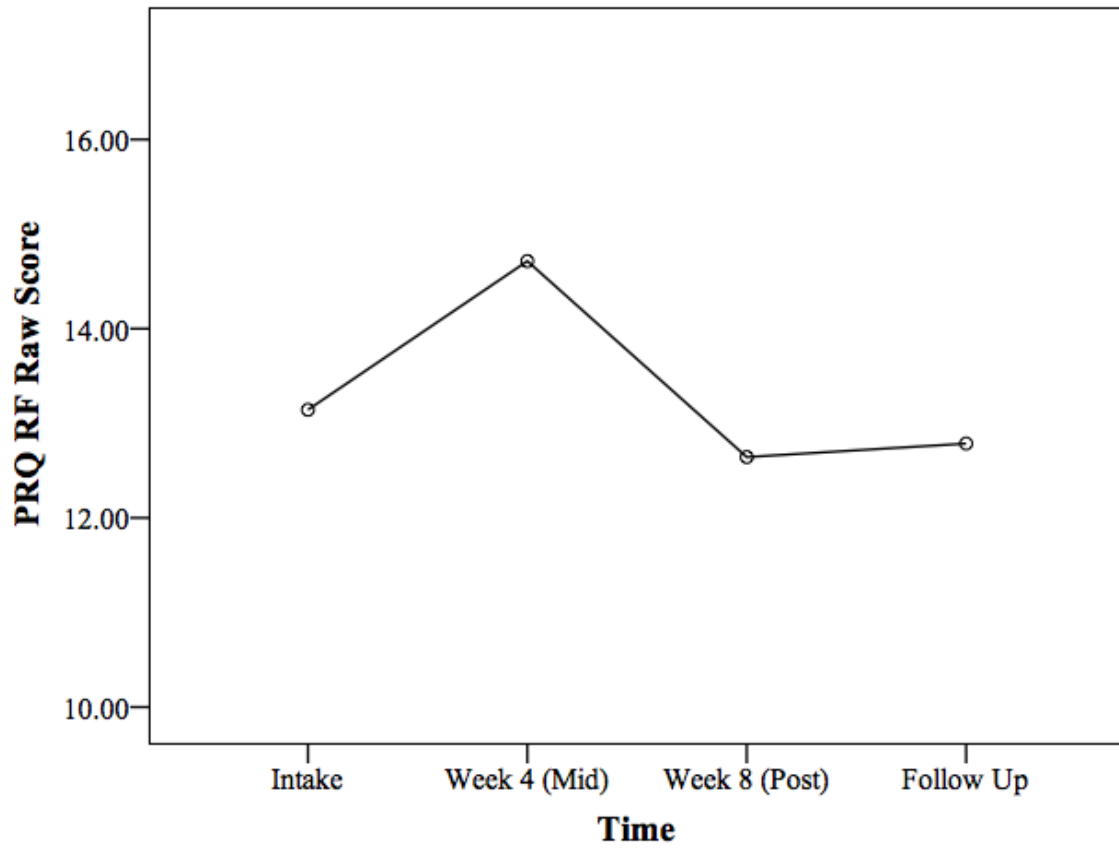


Figure 3: Results of repeated measures ANOVA for relational frustration (PRQ RF).

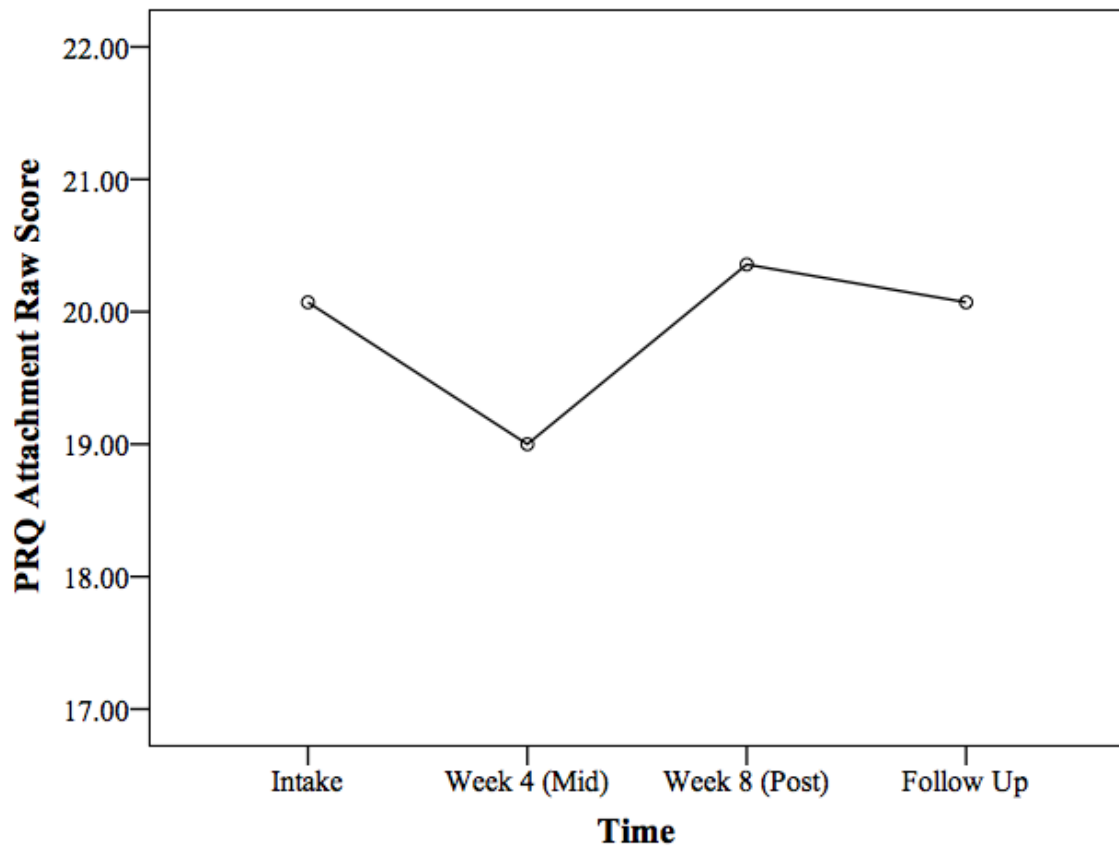


Figure 4: Results of repeated measures ANOVA for attachment (PRQ A).

Repeated Measures Analyses and Effect Sizes: Pre, mid and post data.

PSI. A repeated-measures analysis of variance revealed that mean parenting stress differed statistically significantly over the course of the mindful parenting group, $F(2,38) = 7.14, p = .00$. Simple contrasts indicated significant change from intake to post assessment ($p = .00$), which is in line with the results from the rANOVA with all four time points. Notably, parenting stress did not differ significantly from pre to mid testing. A large effect size was found for parenting stress ($d = 1.27$), providing evidence that participation in the Mindful Parenting Group elicits a reduction in parenting stress, but only after completion of the group.

FFMQ. A repeated-measures analysis of variance revealed that mean mindfulness differed at the significant level over the course of the mindful parenting group, $F(2,38) = 3.83, p = .03$. Simple contrasts did not indicate a significant change from intake to mid or post assessment. Based on visual inspection of the data and means (Table 2 and Figure 2), it appears that there was an initial decrease in mindfulness, followed by an increase beyond initial levels of mindfulness documented at intake. This will be further examined in the discussion. A medium effect size was found for mindfulness over the course of the intervention ($d = 0.78$).

PRQ. A repeated-measures analysis of variance revealed that mean relational frustration differed significantly between time points over the course of the Mindful Parenting Group, $F(2,34) = 3.84, p = .03$. Simple contrasts did not reveal any significant reductions between intake and mid or post assessment. A large effect size was found for relational frustration ($d = 0.95$).

A repeated-measures analysis of variance revealed that there was not a significant change on level of attachment over the course of the group, $F(2,34) = 1.18, p = .32$. A medium effect size was found for attachment ($d = 0.53$). See Table 5 for both the calculated effect sizes and p -values obtained from each rANOVA.

Table 5

rANOVA Results: 3 Time Points

	<i>p</i> -value	Cohen's <i>d</i>
PSI	0.00	1.27
FFMQ	0.03	0.78
PRQ RF	0.03	0.97
PRQ A	0.32	0.53

Feasibility

Recruitment and Retention. Session turnout varied among participants, with most parents (67%) demonstrating near-perfect attendance, defined as attending 7-8 out of the 8 sessions. The most commonly cited reason for missing a session was health related (sick child and/or sick parent). Other reasons included school-related conflicts (e.g., school concert, teacher conference), and infrequently emergencies (e.g. car accident, child in emergency room).

Social Validity Questionnaire. Parents filled out an assessment of the Mindful Parenting group after their final session. Overall, parents indicated that the group was important to them (average rating 7.2 on a scale from 1-not at all important to 10-extremely important). They rated the group discussions and education as very important (mean=8.9), followed by learning the three minute breathing space (mean=8.6), increased awareness in daily parenting (mean=8.6) and awareness of parenting patterns (mean=8.6). They reported

the weekly diaries as the least important (mean=4.7). Parents also reported on the amount of change they saw on a number of issues, rating from 1 to 4 (1-negative change, 2-no change, 3-some positive change, 4-positive change). Importantly, parents did not report any negative changes across the domains, and overall rated positive change across all domains (mean=3.2). Parents reported the most positive change on learning to take better care of themselves (mean=3.4) and believing that they can improve their relationship with their child and family (mean=3.5). Over half reported some positive change ($n=15$), and the remaining parents reported positive change ($n=6$) on learning to take better care of themselves. Similarly, over half of the parents reported some positive change ($n=12$) on believing they were capable of improving their relationships with family, and the majority of the remaining participants reported positive change in this domain ($n=7$). Parents also rated positive change on having the ability to handle stressful parenting situations (mean=3.1), increased awareness of what is stressful in their lives (mean=3.2), and awareness of stressful parenting situations while they are happening (mean=3.3). When asked if they got something of lasting value and importance as a result of the training, all parents responded 'yes'.

Discussion

The primary aim of the current study was to implement the Mindful Parenting Program with parents of children with Autism Spectrum Disorder and evaluate its impact on parenting stress, parent's level of mindfulness, and on the parent-child relationship. Of particular interest is the impact of a mindfulness-based parent-directed support group on parenting stress due to the large body of research documenting elevated levels of stress in this population of parents. Overall, results demonstrated significant effects on parenting stress after participation in the group. Significant changes in mindfulness and relational frustration were also found, but only for the rANOVAs with three time points and increased sample size. No significant changes were found for attachment. Importantly, medium to large effect sizes were found for parent's level of mindfulness, parenting stress, and the relational frustration after participation in the Mindful Parenting group. The findings for each outcome measure of interest will be discussed in more detail below.

Mindfulness

The current study found a significant change in mindfulness, but only with the rANOVA with three time points and increased sample size ($n=20$). While the rANOVA with four time points did not reach statistical significance ($p = .08$), it retained a similar effect size to the analysis with only three time points. This may suggest the necessity of a large sample size in order to detect a medium effect size in the rANOVA with four time points, which had a smaller sample size ($n=16$). This drop off in significance may be due to a reduction in power, and warrants further investigation with a larger sample. Notably, both analyses indicated a medium to large effect size, suggesting a clinically meaningful effect of participation in the Mindful Parenting group on overall mindfulness. This is in line with

previous research using the same curriculum (de Bruin et al., 2014), demonstrating that instruction in the group format on incorporating mindfulness into parenting has an impact on parent's self reported level of mindfulness. This is an important finding, as higher levels of mindfulness have been found to promote positive parenting practices (e.g. MacDonald & Hastings, 2010) as well as positive mental health benefits (Hofman et al., 2010). Previous research has demonstrated that increased mindfulness in caregiving has the potential to transfer to the parent-child relationship, thus having a large impact on the family unit rather than solely on the parent alone (Singh et al., 2010).

Looking more closely at the mean levels of mindfulness (mean FFMQ scores) at each time point over the course of the group, it is interesting to note that mindfulness decreases from intake to mid assessment, and then increases past the level at intake by post assessment. Questions on the mindfulness questionnaire (FFMQ) ask parents to reflect on their reaction to their own emotions, the frequency with which they pay attention to different aspects of their experience throughout the day, and recognize self-criticism. It is hypothesized that prior to practicing mindfulness, parents are not aware of how often they are *not* aware of their automatic patterns of behavior, and some of these areas (e.g. tendency to self-criticize, be lost in thought, etc.) may be less apparent to parents before practice. Dr. Nirbay Singh, a leading expert in applied mindfulness research, discussed similar findings at the International Conference on Mindfulness, suggesting that this pattern may be common in individuals who have never been exposed to the idea of mindfulness prior to participation (Rome, Italy, 2016). Interestingly, the average score on the FFMQ returns to baseline levels at follow up, which may indicate difficulties with maintaining or internalizing mindfulness practices without the presence of the group. While this not deter from the medium to large effect sizes

found for level of mindfulness, it is an important qualitative point to keep in mind when teaching mindfulness, as well as measuring mindfulness for research purposes. There may be a non-linear progression from “less” to “more” mindful, which is something that future research might further explore.

Parenting Stress

Parenting stress was assessed using the PSI, and was an outcome measure of high interest due to the elevated levels of stress reported in this population of parents. The current study found significant reductions in parenting stress (both with and without follow up data) over the course of the group. Importantly, simple contrasts demonstrated that these reductions were seen from intake to post assessment. This suggests that in order to produce positive effects on parenting stress, completion of the course is likely necessary. The magnitude of the effect was also large for both analyses, indicating these reductions were clinically meaningful as well. The findings that sustained engagement with the curriculum promoted significant reductions in parenting stress are again in line with research documenting positive effects on level of stress in parents of children with behavioral difficulties (van der Oord et al., 2012).

These findings are important, as they document the potential benefits of group mindfulness training for a population of parents who demonstrate elevated levels of stress when compared to parents of typically developing and developmentally disabled children. The results suggest that group training in mindfulness may be a viable means of helping reduce stress for this group of parents. High levels of stress are associated with not only poor parental mental health, but also reductions in positive effects of early intervention for children with ASD (Osborne et al., 2008). Group mindfulness training may be a means of

helping parents to manage the stressors of parenting a child with autism, which the well-being of both the parent and child with autism. If we can help to support parents in managing stress related to parenting, then it is likely that there will be a cascading effect on the child (Bronfenbrenner & Ceci, 1994), as well parental mental health more generally. Future research might investigate these cascading effects.

The analyses in the current study utilized the raw scores of the PSI due to the inclusion of parents with children up through 17 years of age (the PSI only has norms up through age 12). It is clinically useful to investigate whether participation in the group brought parenting stress levels closer to normative levels of stress. Looking at t-scores (mean of 50, standard deviation of 10), 67% of parents had total parenting stress scores greater than 1 standard deviation above the mean (t-scores >60). After participation, only 45% of parents were at this elevated level. Raw scores allow us to look at change over time, which was the primary aim of the current study, but do not give us meaningful information about levels of stress. By looking at the t-scores, it appears that not only were their reductions over time (as measured by the rANOVA), but these reductions may be useful in reducing stress to more normative levels.

Parent-Child Relationship

The Parenting Relationship Questionnaire was utilized to assess the impact of participation in the Mindful Parenting Group on the parent child relationship. In order to assess this, the Relational Frustration and Attachment subscales of the PRQ were examined. The Relational Frustration subscale assesses parent's level of distress in relating to and controlling their child's behavior and affect, as well as their tendency to overreact and become frustrated in situations common to the parenting role (Kampaus & Reynolds, 2006).

Examples of items include “I overreact when my child misbehaves,” “I lose my temper with my child,” and “I lose my patience with my child.” A significant effect was found for the Relational Frustration subscale when analyses included only three data points (pre, mid, post) which allowed data from more participants to be analyzed ($n=18$ as compared to $n=14$). The rANOVA with four time points was underpowered, based on a priori power analysis, and thus the loss of significance may be due to a reduction in power. Further investigation is warranted. Importantly, large effect sizes were found for both analyses, regardless of significance level, suggesting that participation in the group may produce a clinically meaningful reduction in relational frustration after participation in the Mindful Parenting group. This finding may tap into behavioral changes that parents reported throughout the group. While qualitative data was not systematically collected, parents reported taking a pause before reacting to a child’s behavior, and learning to use breath as a means to decrease frustration and anger, which may be reflected in decreased self-reported frustration with their child.

The Attachment subscale of the PRQ assesses the affective, cognitive and behavioral relationship between a parent and child that results in parent’s feeling empathy, closeness and understanding towards their child (Kampaus & Reynolds, 2006). Examples include “I know what my child is feeling,” “when my child is upset, I can calm him or her,” and “I enjoy spending time with my child.” No statistically significant changes were seen on this subscale, although moderate effect sizes were found for both analyses. The rANOVA with four time points was underpowered, although the increase in participants in the rANOVA with three time points did not change the level of significance. The smallest effect sizes were also found for this measure, which may suggest that attachment is not as strongly impacted through

participation in the Mindful Parenting group. Research has demonstrated that child's symptom severity is related to attachment security (Van IJzendoorn et al., 2007), and thus, regardless of a parent's ability to attune to their child, large changes may not be likely. In order to detect a small effect, more participants would be needed.

Limitations

While the current study provides promising evidence for the use of mindfulness-based group support for parents of children with ASD, there are limitations to be addressed. As this line of research is still in its infancy, it is important to first investigate how the Mindful Parenting group impacts participants prior to conducting a full-scale, randomized controlled trial. A within subject repeated measures design was utilized as it does not require the large sample size required for an RCT, but has its limitations. As a quasi-experimental design, there was no randomization of participants. Thus, the participants included in the study were self-selected, and there may be something unique about parents who elect to participate in a group that is not representative of the population of parents of children with ASD in general. The current study also did not include a control group, which would allow for investigation of whether the proposed intervention had an effect on parenting stress when compared to treatment as usual. However, the within subject repeated measure design uses each subject as their own control, and allows for documentation of change over time, providing for stronger evidence that any changes that occur are likely due to implementation of the intervention. Despite this limitation, only 4 parents in the current study (19%) reported having participated in any form of support group, and thus "treatment as usual" would be the absence of a support group. Because we do not expect or learn from the literature that stress

in parents of autism decreases over time (e.g. Dyson, 1993), this limitation does not appear to vastly weaken the design.

When a control group is not available, it is also important to keep in mind additional threats to internal validity, including history, maturation, testing, regression, attrition, and selection. It is possible that some other event, rather than the treatment, would cause a change in participant behavior, although this is not likely as three different groups were implemented at two different times points. Maturation is also not likely to affect the outcomes measured in the current study, specifically noting that parent stress is not likely to reduce on its own over an eight week period. Testing effects are important to note, but due to the limited exposure to the measures, it is not likely that participant's familiarity with the measures would be the reason for changes noted after participation in the group. Regression to the mean is a possibility, but will be monitored through analysis of outliers in the data set. Attrition is an important factor to monitor, and 80% of the 30 participants who signed up and attended the first session completed the entire course. Lastly, selection may be a larger threat to external validity in the current study, as participants were self-selected. Specifically, this limits the generalizability of overall findings. Thus, the finds from the current study will apply to parents of children with autism who *seek* support above and beyond parenting skills training.

Despite these limitations, it is important to note that external validity is generally considered to be robust in applied research, where clients are seeking support from a setting that typically provides such support (Heppner, Wampold, & Kivlighan, 2007). As the current study is offering a much-needed service to a wide range of parents of children with autism, it is likely and rational to conclude that results can at least be generalized to similar populations in similar communities.

Future Directions

The findings of the current study open up a host of future research endeavors, beyond including a control group and increasing sample size and replicating findings. One area that requires additional investigation is the long-term, sustainable gains after participation in the Mindful Parenting group. The current study attempted to investigate short-term follow up (after 5 weeks), but due to reduced sample size at follow up, results for some of the analyses were underpowered. Regardless of the loss of participants, medium to large effect sizes were found with the follow up data for mindfulness, parenting stress, and both measures of relationship quality. The lack of statistical significant at the alpha level of .05 for all measures but parenting stress require replication in order to determine whether the moderate to large effect sizes are simply due to chance. Nonetheless, it is unclear whether these gains will remain long term and additional studies using longer follow up data points (6 or 12 months) will be particularly useful in this area. An investigation of whether or not gains are enhanced by periodic group meetings would also be important, as many parents noted that during the follow up period, it was difficult to maintain any formal meditation practice.

In terms of maintaining practice, future research focused on assessing parent's level of engagement with the curriculum outside of the weekly group meetings is necessary. The current study did not collect daily records of the time parent's spent practicing the meditation exercises, although parents did report on this retrospectively in the social validity questionnaire. Seven of the twenty participants who filled out this questionnaire reported never practicing the formal meditation exercises outside of the weekly group sessions. Level of mindfulness over the course of the group was informally explored by splitting the parents into two group; "low" ($n=7$) and "high" ($n=13$) practicing parents, which were defined as

either never practicing or practicing 1 or more times per week. An examination of the means on the FFMQ indicated that only the high practicing group of parents retained gains on level of mindfulness at follow-up. Future research investigating the impact of level of practice on outcome is needed. In addition, it may be worthwhile to investigate the use of different methods for promoting home practice between sessions. This might include text or email reminders or the use of a mindfulness application.

Importantly, future research efforts might explicitly utilize a qualitative research design to investigate and document parent's experience of the group. The parents in the current study informally shared their experiences of participation at the final group meeting, and require summary here. Many parents reported gratitude for a new tool to help them cope with the stressors involved in parenting a child with autism. Others reported enjoyment and relief that came with being surrounded by parents who could more easily relate to their own parenting experiences. Another theme amongst parents who participated with their parenting partner was the new language they acquired through the group to help them understand their own reactions to stress. Parents also reported appreciation of the time they were able to take for themselves, and for the quiet and calming effect of spending an hour and a half in a safe and non-judgmental environment. This summary is not sufficient to fully capture the experience of parents, but is a vitally important area to be investigated. If we are introducing a new means to support parents, it is only logical to get a sense of what this new support is like for them.

Similarly, the current study utilized all parent-report measures as a means to assess how participation in the group impacted their experience of stress, mindfulness and the parent-child relationship. While these provide useful information on the parent's subjective

experience, future research might utilize behavioral measures to assess whether or not their participation had an impact on their interactions with both their children as well as their parenting partners. Collecting data from multiple respondents would also help aid understanding of the possible cascading effects of participation in the group. This might include having the participant's spouse or partner report on their parenting behavior as well as their relationship quality. The current study was not focused assessing the impact of mindfulness training on romantic relationship quality, although research suggests that mindfulness is related to increased relationship satisfaction as well as better communication within the relationship (Barnes et al., 2007). This may be a useful line of inquiry as the unfortunate truth is that marital discourse and divorce rates are elevated in parents of children with autism (Hartley et al., 2010).

Lastly, research examining possible predictors of outcome for the Mindful Parenting group would be clinically valuable. It was noted that parents in the current study had highly variable baseline characteristics, both in their self-reported level of stress, depressive symptoms as well as their child's age and level of symptom severity. These, in addition to possible personality factors, might be useful to explore as predictors of more optimal outcomes. Further exploration of factors that might inhibit parents from completing the group would be useful, as there were seven parents who for multiple reasons were unable to complete the group. It was noted that parents who did not complete the group had children with an average age lower than that of the parents who completed the group (5.36 years versus 9.50 years). These parents may face additional barriers, and might require shorter sessions, or sessions that would not interfere with their child's bed time (the current study held group that started at 6PM or 6:30PM). In addition, informal analysis indicated that

parents who did not complete the group had a higher average score on level of depressive symptoms than parents who completed the group. Importantly, the average score on the CESD in the parents who did not complete the group was in the clinical range for depressive symptoms. Future research into these variables and how they impact retention, engagement with the curriculum outside of the weekly sessions, and outcome will allow us to better understand for whom this type of support is most useful, and how we can make it more accessible to parents who might be struggling the most.

General Discussion

The findings of the current study suggest that group mindfulness training may lead to increased level of mindfulness, in addition to reductions in parenting stress and relational frustration in parents of children with autism. These findings are important when taking an ecological view of child development, which asserts that the interactions that occur frequently and repeatedly over time (proximal processes) are what support and promote development (Bronfenbrenner & Ceci, 1994). For children and adolescents with autism, parents are involved in a large majority of these interactions. Their well-being and mental health are necessary in order to cope with the many stressors that come with parenting in general, and the additional stressors (e.g. coordinating interventions, attending IEP meetings, coping with behavioral problems) that come with parenting a child with ASD more specifically. From this lens, support directed at the child *and* parents are both needed.

All parents in the current study indicated that their child had received intervention and/or they had received parent training prior to participation. Thus, the results suggest that the Mindful Parenting group may have the potential to augment child directed intervention and parent skills training programs as a means to provide additional support to parents. This

support may be especially useful for parents who have already received parenting skills training but still endure high levels of stress. Even when parents are equipped with necessary skills to support their children's needs, elevated levels of stress and the bi-products of chronic stress such as depression, make implementing behavioral strategies difficult and ineffective (e.g. Robbins, Dunlap & Plienis, 1991). Mindfulness, as it teaches parents to fully immerse themselves in the present moment, may help reduce rumination about the past and constant worry and anxiety about the future. A lack of mindfulness has important implications for attention, which is critical for multiple facets of parenting a child with ASD. Lower levels of mindfulness have been associated with exaggerated lapses in attention (Schmertz, Anderson & Robins, 2009), which may be related to an individual's lack of awareness of the present experience. A great deal of attention and focus is required of parents of children with ASD, particularly during parent training and parent-directed intervention efforts. In addition to diminished attention, excessive rumination about the past, which is related to depression and/or worry about the future, which is related to anxiety, put parents at risk for missing the small joys of parenthood. This is especially likely when rumination and excessive worry lead to clinical levels of depression and anxiety. Mindfulness provides parents with a tool to stabilize their thoughts and connect with the present moment, with a non-judgmental and compassionate stance.

These results contribute to the newly emerging line of research that highlights the additional benefit of providing direct support to this population of parents (e.g. Ferraioli & Harris, 2013). The group format of the proposed study provides an inexpensive and efficient means of supporting a larger group of parents. Early research investigating the utility of providing mindfulness training to parents of children with autism and developmental

disabilities did so at the individual level (e.g. Singh et al., 2006), and documented positive results for parents and children. The possibility of providing similar training in a group format is an exciting finding. The use of the group format for parents of children with autism spectrum disorder adds an additional layer of informal social support, as parents have the opportunity to connect with local parents. While no measure of contact outside of group was collected, informal communication with participants indicated that at least some of the parents initiated play dates and social gatherings with other group members both during and after completion of the Mindful Parenting Group. This leads an important area of research open for future investigations, as social support has been found to be vitally important for parents of children with ASD (Falk, Norris & Quinn, 2014).

Importantly, the large reductions in stress after participation in the Mindful Parenting group provide evidence of the strength and resiliency of parents of a child with autism spectrum disorder. The advantage of this group is that the practices taught to parents are always with them. They learn that they always have the choice to take a pause and come back to their breath or their body. This momentary pause in the present moment can provide relief from suffering due to rumination about the past or worries about the future, and appears to promote reductions in stress. Parents learn that taking care of themselves is vitally important, and that they are not alone in their struggles. The current study was the first attempt to understand the possible benefit of such a group for parents of children with autism. Future research focused on exploring both the benefits and challenges of this type of support group might lead to a broader, family systems approach to autism intervention as we think of it today.

References

- Abidin, R. R. (1990). *Parenting Stress Index (PSI)*. Charlottesville, VA: Pediatric Psychology Press.
- Abidin, R. R. (1995). *Parenting Stress Index (3rd ed.)*. Odessa, FL: Psychological Assessment Resources.
- Altmaier, E., & Maloney, R. (2007). An initial evaluation of a mindful parenting program. *Journal of Clinical Psychology, 63*(12), 1231-1238.
- Amato, P. R., & Fowler, F. (2002). Parenting practices, child adjustment, and family diversity. *Journal of marriage and family, 64*(3), 703-716.
- American Psychiatric Association. (2013). *(DSM-5) Diagnostic and statistical manual of mental disorders, 5th edition*. Washington, DC: American Psychiatric Press, Inc.
- Anderson, D. K., Liang, J. W., & Lord, C. (2014). Predicting young adult outcome among more and less cognitively able individuals with autism spectrum disorders. *Journal of Child Psychology and Psychiatry, 55*(5), 485-494.
- Banach, M., Iudice, J., Conway, L., & Couse, L. J. (2010). Family support and empowerment: Post autism diagnosis support group for parents. *Social Work with Groups, 33*(1), 69-83.
- 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*(1), 27-45.
- Baer, R. A., Smith, G. T., Lykins, E., Button, D., Krietemeyer, J., Sauer, S., ... & Williams, J. M. G. (2008). Construct validity of the five facet mindfulness questionnaire in meditating and nonmeditating samples. *Assessment, 15*(3), 329-342.

- 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.
- Banach, M., Iudice, J., Conway, L., & Couse, L. J. (2010). Family support and empowerment: Post autism diagnosis support group for parents. *Social Work with Groups*, 33(1), 69-83.
- Barnes, S., Brown, K. W., Krusemark, E., Campbell, W. K., & Rogge, R. D. (2007). The role of mindfulness in romantic relationship satisfaction and responses to relationship stress. *Journal of marital and family therapy*, 33(4), 482-500.
- Barnett, D., Clements, M., Kaplan-Estrin, M. & Fialka, J. (2003). Building new dreams; supporting parents' adaptation to their child with special needs. *Infants and Young Children: An Interdisciplinary Journal of Special Care Practices*, 16(3): 184–200.
- Baumrind, D. (1991). Parenting styles and adolescent development. *The encyclopedia of adolescence*, 2, 746-758.
- Baydar, N., Reid, M. J., & Webster-Stratton, C. (2003). The role of mental health factors and program engagement in the effectiveness of a preventive parenting program for Head Start mothers. *Child development*, 1433-1453.
- 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.

- Benson, P. R. (2006). The impact of child symptom severity on depressed mood among parents of children with ASD: The mediating role of stress proliferation. *Journal of Autism and Developmental Disorders*, 36(5), 685-695.
- Benson, P. R., & Karlof, K. L. (2009). Anger, stress proliferation, and depressed mood among parents of children with ASD: A longitudinal replication. *Journal of autism and developmental disorders*, 39(2), 350-362.
- Blackledge, J. T., & Hayes, S. C. (2006). Using acceptance and commitment training in the support of parents of children diagnosed with autism. *Child & Family Behavior Therapy*, 28(1), 1-18. doi: 10.1300/J019v28n01_01
- Bögels, S., Hoogstad, B., van Dun, L., de Schutter, S., & Restifo, K. (2008). Mindfulness training for adolescents with externalizing disorders and their parents. *Behavioural and Cognitive Psychotherapy*, 36(02), 193-209.
- Bögels, S. M., Lehtonen, A., & Restifo, K. (2010). Mindful parenting in mental health care. *Mindfulness*, 1(2), 107-120.
- Bögels, S., & Restifo, K. (2013). *Mindful parenting: A guide for mental health practitioners*. Springer Science & Business Media.
- Bouma, R., & Schweitzer, R. (1990). The impact of chronic childhood illness on family stress: A comparison between autism and cystic fibrosis. *Journal of clinical psychology*, 46(6), 722-730.
- Boyd, B. A. (2002). Examining the relationship between stress and lack of social support in mothers of children with autism. *Focus on Autism and Other Developmental Disabilities*, 17(4), 208-215.

- Bronfenbrenner, U., & Ceci, S. J. (1994). Nature-nurture reconceptualized in developmental perspective: A bioecological model. *Psychological review*, *101*(4), 568.
- Brookman-Fraze, L., Vismara, L., Drahot, A., Stahmer, A., & Openden, D. (2009). Parent training interventions for children with autism spectrum disorders. In *Applied behavior analysis for children with autism spectrum disorders* (pp. 237-257). Springer New York.
- Campbell, D. T., & Stanley, J. C. (1966). *Experimental and quasi-experimental designs for research*. Boston: Houghton Mifflin Company.
- Carmody, J., & Baer, R. A. (2009). How long does a mindfulness-based stress reduction program need to be? A review of class contact hours and effect sizes for psychological distress. *Journal of clinical psychology*, *65*(6), 627-638.
- CDC (2014) Prevalence of autism spectrum disorders among children aged 8 years: autism and developmental disabilities monitoring network, 11 sites, United States, 2010. *MMWR Surveillance Summaries*, *63*(2), 1–22.
- Chiesa, A., & Serretti, A. (2009). Mindfulness-based stress reduction for stress management in healthy people: a review and meta-analysis. *The journal of alternative and complementary medicine*, *15*(5), 593-600.
- Coatsworth, J. D., Duncan, L. G., Greenberg, M. T., & Nix, R. L. (2010). Changing parent's mindfulness, child management skills and relationship quality with their youth: Results from a randomized pilot intervention trial. *Journal of child and family studies*, *19*(2), 203-217.
- Cohen, J. (1988). The effect size index: d. *Statistical Power Analysis for the Behavioral Sciences*. 2nd ed. New Jersey: Lawrence Erl-baum Associates, 20-26.

- Cridland, E. K., Jones, S. C., Magee, C. A., & Caputi, P. (2014). Family-focused autism spectrum disorder research: A review of the utility of family systems approaches. *Autism, 18*(3), 213-222.
- Crnic, K. A., Gaze, C., & Hoffman, C. (2005). Cumulative parenting stress across the preschool period: Relations to maternal parenting and child behaviour at age 5. *Infant and Child Development, 14*(2), 117-132.
- Crnic, K. A., & Greenberg, M. T. (1990). Minor parenting stresses with young children. *Child development, 61*(5), 1628-1637.
- Crnic, K., & Low, C. (2002). Everyday stresses and parenting. *Handbook of Parenting Volume 5 Practical Issues in Parenting, 242*.
- Davidson, R. J., Kabat-Zinn, J., Schumacher, J., Rosenkranz, M., Muller, D., Santorelli, S. F., ... & Sheridan, J. F. (2003). Alterations in brain and immune function produced by mindfulness meditation. *Psychosomatic medicine, 65*(4), 564-570.
- Davis, N. O., & Carter, A. S. (2008). Parenting stress in mothers and fathers of toddlers with autism spectrum disorders: Associations with child characteristics. *Journal of autism and developmental disorders, 38*(7), 1278-1291. doi: 10.1007/s10803-007-0512-z
- de Bruin, E. I., Blom, R., Smit, F. M., van Steensel, F. J., & Bögels, S. M. (2014). MYmind: Mindfulness training for Youngsters with autism spectrum disorders and their parents. *Autism, 1362361314553279*.
- Deater-Deckard, K. (1998). Parenting stress and child adjustment: Some old hypotheses and new questions. *Clinical Psychology: Science and Practice, 5*(3), 314-332.
- Derguy, C., M'Bailara, K., Michel, G., Roux, S., & Bouvard, M. (2016). The Need for an Ecological Approach to Parental Stress in Autism Spectrum Disorders: The

- Combined Role of Individual and Environmental Factors. *Journal of autism and developmental disorders*, 46(6), 1895-1905.
- Donovan, A. M. (1988). Family stress and ways of coping with adolescents who have handicaps: Maternal perceptions. *American Journal on Mental Retardation*.
- Dumas, J. E. (2005). Mindfulness-based parent training: Strategies to lessen the grip of automaticity in families with disruptive children. *Journal of Clinical Child and Adolescent Psychology*, 34(4), 779-791.
- Duncan, L. G. (2007). *Assessment of mindful parenting among parents of early adolescents: Development and validation of the Interpersonal Mindfulness in Parenting scale* (Doctoral dissertation, The Pennsylvania State University).
- 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. doi: 10.1007/s10567-009-0046-3
- Dunn, M. E., Burbine, T., Bowers, C. A., & Tantleff-Dunn, S. (2001). Moderators of stress in parents of children with autism. *Community mental health journal*, 37(1), 39-52.
- Dunst, C. J., Trivette, C. M., & Cross, A. H. (1986). Mediating influences of social support: Personal, family, and child outcomes. *American journal of mental deficiency*.
- Duvekot, J., van der Ende, J., Verhulst, F. C., & Greaves-Lord, K. (2015). The screening accuracy of the parent and teacher-reported Social Responsiveness Scale (SRS): Comparison with the 3Di and ADOS. *Journal of autism and developmental disorders*, 45(6), 1658-1672.

- 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.
- Dyson, L. L. (1993). Response to the presence of a child with disabilities: Parental stress and family functioning over time. *American Journal on Mental Retardation*.
- Estes, A., Olson, E., Sullivan, K., Greenson, J., Winter, J., Dawson, G., & Munson, J. (2013). Parenting-related stress and psychological distress in mothers of toddlers with autism spectrum disorders. *Brain and Development, 35*(2), 133-138.
- Falk, N. H., Norris, K., & Quinn, M. G. (2014). The factors predicting stress, anxiety and depression in the parents of children with autism. *Journal of autism and developmental disorders, 44*(12), 3185-3203.
- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior research methods, 39*(2), 175-191.
- Fava, L., Strauss, K., Valeri, G., D'Elia, L., Arima, S., & Vicari, S. (2011). The effectiveness of a cross-setting complementary staff-and parent-mediated early intensive behavioral intervention for young children with ASD. *Research in Autism Spectrum Disorders, 5*(4), 1479-1492.
- Ferraioli, S. J., & Harris, S. L. (2013). Comparative effects of mindfulness and skills-based parent training programs for parents of children with autism: feasibility and preliminary outcome data. *Mindfulness, 4*(2), 89-101.

- Fein, D., Barton, M., Eigsti, I. M., Kelley, E., Naigles, L., Schultz, R. T., ... & Tyson, K. (2013). Optimal outcome in individuals with a history of autism. *Journal of Child Psychology and Psychiatry*, *54*(2), 195-205.
- Gray, D. E. (2002). 'Everybody just freezes. Everybody is just embarrassed': Felt and enacted stigma among parents of children with high functioning autism. *Sociology of Health & Illness*, *24*(6), 734-749.
- Gray, D. E., & Holden, W. J. (1992). Psycho-social well-being among the parents of children with autism. *Australia and New Zealand Journal of Developmental Disabilities*, *18*(2), 83-93.
- Greenhouse, S. W., & Geisser, S. (1959). On methods in the analysis of profile data. *Psychometrika*, *24*(2), 95-112.
- Grossman, P., Niemann, L., Schmidt, S., & Walach, H. (2004). Mindfulness-based stress reduction and health benefits: A meta-analysis. *Journal of psychosomatic research*, *57*(1), 35-43.
- Guralnick, M. J., Hammond, M. A., Neville, B., & Connor, R. T. (2008). The relationship between sources and functions of social support and dimensions of child-and parent-related stress. *Journal of Intellectual Disability Research*, *52*(12), 1138-1154. doi: 10.1111/j.1365-2788.2008.01073.x
- Hartley, S. L., Barker, E. T., Seltzer, M. M., Floyd, F., Greenberg, J., Orsmond, G., & Bolt, D. (2010). The relative risk and timing of divorce in families of children with an autism spectrum disorder. *Journal of Family Psychology*, *24*(4), 449.
- Hayes, S. A., & Watson, S. L. (2013). The impact of parenting stress: A meta-analysis of studies comparing the experience of parenting stress in parents of children with and

- without autism spectrum disorder. *Journal of autism and developmental disorders*, 43(3), 629-642.
- Heppner, P., Wampold, B., & Kivlighan Jr, D. (2007). *Research design in counseling*. Cengage Learning.
- Hofmann, S. G., Sawyer, A. T., Witt, A. A., & Oh, D. (2010). The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review. *Journal of consulting and clinical psychology*, 78(2), 169.
- Hölzel, B. K., Carmody, J., Vangel, M., Congleton, C., Yerramsetti, S. M., Gard, T., & Lazar, S. W. (2011). Mindfulness practice leads to increases in regional brain gray matter density. *Psychiatry Research: Neuroimaging*, 191(1), 36-43.
- Huynh, H., & Feldt, L. S. (1976). Estimation of the Box correction for degrees of freedom from sample data in randomized block and split-plot designs. *Journal of Educational and Behavioral Statistics*, 1(1), 69-82.
- Hwang, Y. S., Kearney, P., Klieve, H., Lang, W., & Roberts, J. (2015). Cultivating Mind: Mindfulness Interventions for Children with Autism Spectrum Disorder and Problem Behaviours, and Their Mothers. *Journal of Child and Family Studies*, 1-14.
- Ingersoll, B., & Hambrick, D. Z. (2011). The relationship between the broader autism phenotype, child severity, and stress and depression in parents of children with autism spectrum disorders. *Research in Autism Spectrum Disorders*, 5(1), 337-344.
- Intagliata, J., & Doyle, N. (1984). Enhancing social support for parents of developmentally disabled children: Training in interpersonal problem solving skills. *Mental Retardation*.

- 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. (2003). Mindfulness-based interventions in context: past, present, and future. *Clinical psychology: Science and practice, 10*(2), 144-156.
- Kabat-Zinn, M., & Kabat-Zinn, J. (1997). *Everyday blessings: The inner work of mindful parenting*. Hachette Books.
- Kamphaus, R. W., & Reynolds, C. R. (2006). *PRQ: Parenting relationship questionnaire manual*. NCS Pearson.
- Kasari, C., & Sigman, M. (1997). Linking parental perceptions to interactions in young children with autism. *Journal of autism and developmental disorders, 27*(1), 39-57.
- Kazdin, A. E. (1995). Child, parent and family dysfunction as predictors of outcome in cognitive-behavioral treatment of antisocial children. *Behaviour research and therapy, 33*(3), 271-281.
- Keen, D., Couzens, D., Muspratt, S., & Rodger, S. (2010). The effects of a parent-focused intervention for children with a recent diagnosis of autism spectrum disorder on parenting stress and competence. *Research in Autism Spectrum Disorders, 4*(2), 229-241.
- Keng, S. L., Smoski, M. J., & Robins, C. J. (2011). Effects of mindfulness on psychological health: A review of empirical studies. *Clinical psychology review, 31*(6), 1041-1056.
doi: 10.1016/j.cpr.2011.04.006

- Koegel, R. L., Bimbela, A., & Schreibman, L. (1996). Collateral effects of parent training on family interactions. *Journal of autism and developmental disorders*, 26(3), 347-359. doi: 10.1007/BF02172479
- Koegel, R. L., Schreibman, L., Loos, L. M., Dirlich-Wilhelm, H., Dunlap, G., Robbins, F. R., & Plienis, A. J. (1992). Consistent stress profiles in mothers of children with autism. *Journal of autism and developmental disorders*, 22(2), 205-216. doi: 10.1007/BF01058151
- Kowalkowski, J. D. (2012). The impact of a group-based acceptance and commitment therapy intervention on parents of children diagnosed with an autism spectrum disorder.
- LaFreniere, P. J., & Dumas, J. E. (1995). Behavioral and Contextual Manifestations of Parenting Stress in Mother–Child Dyads. *Early Education and Development*, 6(1), 73-91.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer publishing company.
- Lecavalier, L., Leone, S., & Wiltz, J. (2006). The impact of behaviour problems on caregiver stress in young people with autism spectrum disorders. *Journal of Intellectual Disability Research*, 50(3), 172-183. doi: 10.1111/j.1365-2788.2005.00732.x
- Linehan, M. M. (1993). *Skills training manual for treating borderline personality disorder*. Guilford Press.
- Loyd, B. H., & Abidin, R. R. (1985). Revision of the parenting stress index. *Journal of Pediatric Psychology*, 10(2), 169-177.

- Lovejoy, M. C., Graczyk, P. A., O'Hare, E., & Neuman, G. (2000). Maternal depression and parenting behavior: A meta-analytic review. *Clinical psychology review, 20*(5), 561-592.
- MacDonald, E. E., & Hastings, R. P. (2010). Mindful parenting and care involvement of fathers of children with intellectual disabilities. *Journal of Child and Family Studies, 19*(2), 236-240.
- McConachie, H., & Diggle, T. (2007). Parent implemented early intervention for young children with autism spectrum disorder: A systematic review. *Journal of evaluation in clinical practice, 13*(1), 120-129.
- McConachie, H., Randle, V., Hammal, D., & Le Couteur, A. (2005). A controlled trial of a training course for parents of children with suspected autism spectrum disorder. *The Journal of pediatrics, 147*(3), 335-340.
- Midouhas, E., Yogaratnam, A., Flouri, E., & Charman, T. (2013). Psychopathology trajectories of children with autism spectrum disorder: The role of family poverty and parenting. *Journal of the American Academy of Child & Adolescent Psychiatry, 52*(10), 1057-1065.
- Minjarez, M. B., Mercier, E. M., Williams, S. E., & Hardan, A. Y. (2013). Impact of Pivotal Response Training Group Therapy on Stress and Empowerment in Parents of Children With Autism. *Journal of Positive Behavior Interventions, 15*(2), 71-78. doi: 10.1177/1098300712449055
- Montes, G., & Halterman, J. S. (2007). Psychological functioning and coping among mothers of children with autism: a population-based study. *Pediatrics, 119*(5), e1040-e1046.

- Mugno, D., Ruta, L., D'Arrigo, V. G., & Mazzone, L. (2007). Impairment of quality of life in parents of children and adolescents with pervasive developmental disorder. *Health and quality of life outcomes*, 5(1), 1.
- Myers, B. J., Mackintosh, V. H., & Goin-Kochel, R. P. (2009). "My greatest joy and my greatest heart ache:" Parents' own words on how having a child in the autism spectrum has affected their lives and their families' lives. *Research in Autism Spectrum Disorders*, 3(3), 670-684. doi:10.1016/j.rasd.2009.01.004
- Nakagawa, S. (2004). A farewell to Bonferroni: the problems of low statistical power and publication bias. *Behavioral Ecology*, 15(6), 1044-1045.
- Olsson, M. B., & Hwang, C. P. (2001). Depression in mothers and fathers of children with intellectual disability. *Journal of Intellectual Disability Research*, 45(6), 535-543.
- Osborne, L. A., McHugh, L., Saunders, J., & Reed, P. (2008). Parenting stress reduces the effectiveness of early teaching interventions for autistic spectrum disorders. *Journal of autism and developmental disorders*, 38(6), 1092-1103. doi: 10.1007/s10803-007-0497-7
- Osborne, L. A., & Reed, P. (2009). The relationship between parenting stress and behavior problems of children with autistic spectrum disorders. *Exceptional Children*, 76(1), 54-73.
- Osborne, L. A., & Reed, P. (2010). Stress and self-perceived parenting behaviors of parents of children with autistic spectrum conditions. *Research in Autism Spectrum Disorders*, 4(3), 405-414. doi:10.1016/j.rasd.2009.10.011
- Park, E., Cho, M., & Ki, C. S. (2009). Correct use of repeated measures analysis of variance. *The Korean journal of laboratory medicine*, 29(1), 1-9.

- Pisula, E. (2011). Parenting stress in mothers and fathers of children with autism spectrum disorders. *A comprehensive book on autism spectrum disorders*, 5, 87-106.
- Plienis, A. J., Robbins, F. R., & Dunlap, G. (1988). Parent adjustment and family stress as factors in behavioral parent training for young autistic children. *Journal of the Multihandicapped Person*, 1(1), 31-52.
- Poddar, S., Sinha, V. K., & Urbi, M. (2015). Acceptance and commitment therapy on parents of children and adolescents with autism spectrum disorders. *International Journal of Educational and Psychological Researches*, 1(3), 221.
- Ponnet, K., Mortelmans, D., Wouters, E., Van Leeuwen, K., Bastaits, K., & Pasteels, I. (2013). Parenting stress and marital relationship as determinants of mothers' and fathers' parenting. *Personal Relationships*, 20(2), 259-276.
- Radloff, L. S. (1977). The CES-D scale a self-report depression scale for research in the general population. *Applied psychological measurement*, 1(3), 385-401.
- Rao, P. A., & Beidel, D. C. (2009). The impact of children with high-functioning autism on parental stress, sibling adjustment, and family functioning. *Behavior Modification*, 33(4), 437-451.
- Remington, B., Hastings, R. P., Kovshoff, H., Degli Espinosa, F., Jahr, E., Brown, T., ... & Ward, N. (2007). Early intensive behavioral intervention: outcomes for children with autism and their parents after two years. *American Journal on Mental Retardation*, 112(6), 418-438.
- Repetti, R. L., & Wood, J. (1997). Effects of daily stress at work on mothers' interactions with preschoolers. *Journal of Family Psychology*, 11(1), 90.

- Robbins, F. R., Dunlap, G., & Plienis, A. J. (1991). Family characteristics, family training, and the progress of young children with autism. *Journal of Early Intervention, 15*(2), 173-184. doi: 10.1177/105381519101500206
- Rogers, S. J., & Vismara, L. A. (2008). Evidence-based comprehensive treatments for early autism. *Journal of Clinical Child & Adolescent Psychology, 37*(1), 8-38.
- Sallows, G. O., & Graupner, T. D. (2005). Intensive behavioral treatment for children with autism: Four-year outcome and predictors. *American Journal on Mental Retardation, 11*
- Schmertz, S. K., Anderson, P. L., & Robins, D. L. (2009). The relation between self-report mindfulness and performance on tasks of sustained attention. *Journal of Psychopathology and Behavioral Assessment, 31*(1), 60-66.
- Schultz, T. R., Schmidt, C. T., & Stichter, J. P. (2011). A review of parent education programs for parents of children with autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities, 26*(2), 96-104. doi: 10.1177/1088357610397346
- Segal, Z. V., Williams, J. M. G., & Teasdale, J. D. (2002). Mindfulness-based cognitive therapy for depression: A new approach to relapse prevention. *New York: Guilford.*
- Shawler, P. M., & Sullivan, M. A. (2015). Parental Stress, Discipline Strategies, and Child Behavior Problems in Families With Young Children With Autism Spectrum Disorders. *Focus on Autism and Other Developmental Disabilities, 1088357615610114.*

- Silva, L. M., & Schalock, M. (2012). Autism parenting stress index: Initial psychometric evidence. *Journal of autism and developmental disorders*, 42(4), 566-574. doi: 10.1080/13668250410001662892
- Simonoff, E., Pickles, A., Charman, T., Chandler, S., Lucas, T., & Baird, G. (2008). Psychiatric disorders in children with autism spectrum disorders: prevalence, comorbidity, and associated factors in a population-derived sample. *Journal of the American Academy of Child & Adolescent Psychiatry*, 47(8), 921-929.
- Simion, F., Regolin, L., & Bulf, H. (2008). A predisposition for biological motion in the newborn baby. *Proceedings of the National Academy of Sciences*, 105(2), 809-813.
- Singer, G. H. S. (1993). When it's not so easy to change your mind: Some reflections on cognitive interventions for parents of children with disabilities. *Cognitive coping, families, and disability*, 207-220.
- Singh, N. N., Lancioni, G. E., Winton, A. S., Wahler, R. G., Singh, J., & Sage, M. (2004). Mindful caregiving increases happiness among individuals with profound multiple disabilities. *Research in Developmental Disabilities*, 25(2), 207-218.
- Singh, N. N., Lancioni, G. E., Winton, A. S., 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. doi: 10.1177/10634266060140030401
- Singh, N. N., Lancioni, G. E., Winton, A. S., 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., Singh, J., Singh, A. N., Adkins, A. D., & Wahler, R. G. (2010). Training in mindful caregiving transfers to parent–child interactions. *Journal of Child and Family Studies*, *19*(2), 167-174.
- Singh, N., Lancioni, G., Winton, A. W., Karazsia, B., Myers, R., Latham, L., & Singh, J. (2014). Mindfulness-Based Positive Behavior Support (MBPBS) for Mothers of Adolescents with Autism Spectrum Disorder: Effects on Adolescents' Behavior and Parental Stress. *Mindfulness*, *5*(6), 646-657. doi: 10.1007/s12671-014-0321-3
- Sharpley, C. F., Bitsika, V., & Efremidis, B. (1997). Influence of gender, parental health, and perceived expertise of assistance upon stress, anxiety, and depression among parents of children with autism. *Journal of Intellectual and Developmental Disability*, *22*(1), 19-28. doi:10.1080/13668259700033261
- Smith, T., Buch, G. A., & Gamby, T. E. (2000). Parent-directed, intensive early intervention for children with pervasive developmental disorder. *Research in developmental disabilities*, *21*(4), 297-309.
- Stahmer, A. C., & Pellecchia, M. (2015). Moving towards a more ecologically valid model of parent-implemented interventions in autism. *Autism*, *19*(3), 259-261.
- Sullivan, G. M., & Feinn, R. (2012). Using effect size-or why the P value is not enough. *Journal of graduate medical education*, *4*(3), 279-282.
- Tabachnick, B. & Fidell, L. (2007). *Using Multivariate Statistics*, fifth ed., Boston: Allyn & Bacon.
- Tomanik, S., Harris, G. E., & Hawkins, J. (2004). The relationship between behaviours exhibited by children with autism and maternal stress. *Journal of Intellectual and Developmental Disability*, *29*(1), 16-26.

- Van der Oord, S., Bögels, S. M., & Peijnenburg, D. (2012). The effectiveness of mindfulness training for children with ADHD and mindful parenting for their parents. *Journal of child and family studies, 21*(1), 139-147.
- Van IJzendoorn, M. H., Rutgers, A. H., Bakermans-Kranenburg, M. J., Swinkels, S. H., Van Daalen, E., Dietz, C., ... & Van Engeland, H. (2007). Parental sensitivity and attachment in children with autism spectrum disorder: Comparison with children with mental retardation, with language delays, and with typical development. *Child development, 78*(2), 597-608.
- Wasserstein, R. L., & Lazar, N. A. (2016). The ASA's statement on p-values: context, process, and purpose. *The American Statistician*, (just-accepted), 00-00.
- Weiss, J. A., Cappadocia, M. C., MacMullin, J. A., Viecili, M., & Lunsy, Y. (2012). The impact of child problem behaviors of children with ASD on parent mental health: The mediating role of acceptance and empowerment. *Autism, 1362361311422708*.
- West, S. G., Finch, J. F., & Curran, P. J. (1995). Structural equation models with nonnormal variables. *Structural equation modeling: Concepts, issues, and applications, 56-75*.
- Wolf, L. C., Noh, S., Fisman, S. N., & Speechley, M. (1989). Brief report: Psychological effects of parenting stress on parents of autistic children. *Journal of autism and developmental disorders, 19*(1), 157-166.
- Wong, V. C., & Kwan, Q. K. (2010). Randomized controlled trial for early intervention for autism: a pilot study of the Autism 1-2-3 Project. *Journal of autism and developmental disorders, 40*(6), 677-688.

Woodgate, R. L., Ateah, C., & Secco, L. (2008). Living in a world of our own: The experience of parents who have a child with autism. *Qualitative health research, 18*(8), 1075-1083.

Zaidman-Zait, A., Mirenda, P., Duku, E., Szatmari, P., Georgiades, S., Volden, J., ... & Fombonne, E. (2014). Examination of bidirectional relationships between parent stress and two types of problem behavior in children with autism spectrum disorder. *Journal of autism and developmental disorders, 44*(8), 1908-1917.

Zablotsky, B., Bradshaw, C. P., & Stuart, E. A. (2013). The association between mental health, stress, and coping supports in mothers of children with autism spectrum disorders. *Journal of autism and developmental disorders, 43*(6), 1380-1393.

Appendix A

Mindful Parenting Group Weekly Curriculum

Week	In-Session Practice	Parenting exercise	Home Practice
1	Body scan (awareness to the body). Mindful eating exercise.	Morning stress exercise (awareness to bodily sensations, thoughts and action tendencies).	Child as raisin. Mindful attention to routine activities. Mindful eating. Body scan.
2	Body scan. Sitting and seeing meditation (attention to body, breath and visual field).	Morning stress from the perspective of a friend. Gratitude practice.	Body scan. Sitting meditation. Mindful activity with child.
3	Yoga (lying). Sitting meditation (breath & body). 3 min breathing.	Exploring bodily reactions to parenting stress. Self-compassion practice.	Yoga (lying down). Sitting meditation. 3 min breathing. Mindful activity with child.
4	Sitting meditation (breath, body, sound, thoughts). Yoga (standing). 3 min breathing.	Fight-flight-freeze-dance. Imagination: stress + 3 min breathing + doors.	Yoga (standing). Sitting meditation. 3 min breathing . Parenting stress calendar. Autobiography.
5	Sitting meditation. Walking meditation inside.	Pattern recognition exercise. Holding emotions with kindness.	Sitting and walking meditation. 3 min breathing. Parenting stress calendar.
6	Sitting meditation. Walking meditation outside.	Imagination: parent-child conflict + perspective + rupture and repair.	40 min practice. Rupture and repair. Breathing space. Mindfulness day.
7	Loving kindness. Self compassion.	Imagination: limits. Role play: limits. What do I need?	40 min practice. Symbolic object. Write narrative. Mindful limit setting. Loving kindness.
8	Bodyscan. Loving kindness.	Sharing. Gratitude practice.	