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Mindfulness and Parental Stress Among Parents of Children with Development Delays: The Role of the Marital Relationship

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Mindfulness and Parental Stress Among Parents of Children with Developmental Delays: The Role of the Marital Relationship

by

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Doctoral Project submitted in partial satisfaction of
The requirements for the degree
Doctor of Psychology

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Each person whose signature appears below certifies that this thesis in his/her opinion is adequate, in scope and quality, as a doctoral project for the degree Doctor of Psychology.

_____,Chairperson

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TABLE OF CONTENTS

LIST OF FIGURES

Figures

LIST OF TABLES

Tables

ABSTRACT OF THE DOCTORAL PROJECT

Mindfulness and Parental Stress Among Parents of Children with Developmental Delays: The Role of the Marital Relationship

by

Merideth Robinson

Doctor of Psychology, Graduate Program in Clinical Psychology
Loma Linda University, July 2013
Dr. Cameron Neece, Chairperson

Background: Studies have found that marital satisfaction and parenting stress are important risk factors for negative child outcomes. However, parenting stress and broader family factors like the marital relationship are rarely addressed in interventions targeting childhood problems. Mindfulness-based stress reduction (MBSR) appears to be the stress-based intervention that has the most empirical support with over 50 studies demonstrating its effectiveness; however, to date no peer-reviewed article has been published examining whether this intervention can help reduce parenting stress (Chiesa, & Serretti, 2009; Grossman, Niemann, Schmidt, & Walach, 2004). Similarly, research has shown that marital satisfaction significantly impacts parental stress and parent-child relationships, yet research has not examined how this relationship plays out in an intervention aimed at reducing parenting stress and child behavior problems.

Method: Parents of children ages 2.5 to 5 with developmental delays or autism spectrum disorders (n=46) participated in an 8 week mindfulness-based stress reduction program and reported their initial level of marital satisfaction and levels of parenting stress and child behavior problems before and after treatment to determine if marital

satisfaction significantly moderated parents' reported reductions in parenting stress and child behavior problems.

Results: Marital quality significantly moderated changes in child behavior problems throughout the study. Parents with lower marital satisfaction reported higher levels of child behavior problems at the beginning of the study and showed significant reductions in child behavior problems at the completion of the study. In contrast, parents with high levels of marital satisfaction at the beginning of the study reported significantly fewer child behavior problems, and therefore the reduction of child behavior problems was much smaller. Marital satisfaction did not significantly moderate changes in parenting stress over the course of the study, which may be due to small sample size of lack of a moderating relationship because of the high levels of parenting stress with parents of children with developmental delays.

Conclusion: When examining child behavior problems and outcomes, parental marital satisfaction and adjustment are an important variable to consider, especially in the context of children with developmental disabilities. Marital quality significantly moderated changes in child behavior problems over the course of the MBSR program, indicating that parental martial adjustment and satisfaction should be a key target for intervention.

CHAPTER ONE

INTRODUCTION

Parents of children with developmental disabilities have been shown to have very high levels of parental stress (Baker, McIntyre, Blacher, Crnic, Edelbrock, & Low, 2003; Baxter, Cummins, & Yiolitis, 2000; Oelofsen & Richardson, 2006; Webster, Majnemer, Platt, & Shevell, 2008). Research has shown that the high levels of parenting stress experienced by these parents is better accounted for by elevated behavior problems rather than intellectual or developmental functioning (Baker, Blacher, & Olsson, 2005; Baker, Blacher, Crnic, & Edelbrock, 2002; Beck, Hastings, Daley, & Stevenson, 2004; Hastings, 2003; Neece, Green and Baker, 2012). Additionally, studies have found that parenting stress is an important risk factor for negative child outcomes. Elevations child behavior problems have been associated with increased parental stress, which further exacerbates child behavior problems resulting in a negative cycle (Baker et al., 2003; Pesonen et al., 2008; Neece et al., 2012).

Despite this evidence, however, parenting stress is rarely addressed in interventions targeting childhood problems. Many child behavior interventions teach parents skills to manage their children's behavior problems and it is assumed that by reducing behavior problems parenting stress will decline. However, given the research showing that parenting stress has an impact on the development of children's behavior problems, parenting stress should be a target for interventions aiming to reduce child behavior problems (Neece, et al., 2012).

Thus far, no evaluation has been done examining the effectiveness of Mindfulness-Based Stress Reduction (MBSR) for parenting stress. Therefore, little is

known about how such an intervention can affect parenting stress and other variables related to such stress. One example of this is marital satisfaction. Research has shown that marital satisfaction significantly impacts parental stress and parent-child relationships, yet research has not examined how this relationship plays out in an intervention aimed at reducing parenting stress and child behavior problems.

The current study examined how marital satisfaction moderates two primary outcomes of an empirically supported stress reduction intervention: parental stress and child behavior problems. It is important to determine if marital satisfaction impacts the outcomes of a stress-reduction intervention so that future interventions can be tailored to address these issues. Few studies have looked at how aspects of the family system influence outcomes in intervention research. Specifically, little research has been done on how family variables moderate change in interventions. Some studies have examined family systems moderators and their influence on child intervention outcomes (Lochman, Wells, Qu, & Chen, 2013).

This paper is a preliminary examination of moderations of an intervention aimed at improving child behavior problems through reductions in parenting stress. Although several studies have looked at influences of variables within the broader family context though correlations and longitudinal studies, few have looked at the influence on outcomes for the parent or child.

It is important to look at child and parent outcomes within a developmental psychopathology framework to truly understand how aspects of the family system moderate effects in intervention research. When trying to understand the etiopathology of child psychopathology, it is crucial to take a developmentally sensitive approach

(Hudziak & Novins, 2013). However, this is seldom done in research now, although there are some longitudinal and cohort studies that have begun to do so (Rutter, et al., 2012; Cleverly, et al., 2012). Hudziak and Novins (2013) discussed the need to understand child development and how pathology comes about from a developmental vantage point in order to develop interventions that can address pathways of psychopathology and influences on different pathologies.

We have known since Bronfenbrenner's research that the broader family system affects children. The ecological systems theory formulated by Bronfenbrenner highlights the different environmental influences on development that all have bidirectional influences on one another. However, research looking at environmental influences as potential mediators and moderators of intervention outcomes has seldom been done up until recently. The current study is an important addition to the developing research on the moderating role that environmental influences, such as marital satisfaction, can play in child outcomes. Although the study is preliminary, it is a major contribution to the newly developing emphasis on mediation and moderation research in the field today.

Marital Satisfaction and Parenting Stress

Marital satisfaction and parenting stress are closely tied together. Research has found that a high-quality marriage may be compensatory for families with psychological distress (Davies & Cummings, 2006). Having a good relationship with an intimate partner is associated with decreases in parenting stress. Research has shown that there is a relationship between low marital satisfaction and increased stress among mothers (Webster-Stratton, 1989). For couples of children with intellectual disabilities, greater marital quality has been associated lower parenting stress, even after accounting for

socioeconomic status, child characteristics and other measures of social support (Kersh et al., 2006). In a sample of parents of children with developmental delays, both mothers' and fathers' levels of parenting stress were correlated with marital adjustment (Gerstein, Crnic, Blacher, & Baker, 2009). Increases or decreases in parenting stress are associated with both the parent's well-being and marital adjustment. Additionally, one study found that mothers of children with Autism reported less marital satisfaction, less parenting competence, and higher levels of parenting stress when compared to mothers of typically developing children (Rodrigue, Morgan, & Geffken, 1990).

Furthermore, research has shown that the amount of stress in a marital relationship affects how strongly external daily stressors impact marital functioning and satisfaction. Ledermann, Bodenmann, Rudaz, and Bradbury (2010) found that in both men and women, an individual's own relationship stress mediated the association between an individual's external stress and his or her perceptions of marital quality and marital communication in conflicts, as well as her or her partner's perceptions of marital quality and marital communication in conflicts. Daily relationship stress influences marital quality both directly and indirectly though marital communication (Ledermann, et al., 2010). The study highlights the reciprocal nature of this relationship in that stress levels impact marital satisfaction and marital satisfaction influence stress levels. Both parenting and marital stress may have a mutually escalating effect on each other over time.

Marital Satisfaction and Child Behavior Problems

Research has found that parenting stress and marital stress are linked, with marital satisfaction and adjustment being linked to lower parenting stress and vise versa

(Gerstein, Crnic, Blacher, & Baker, 2009). Parenting stress has been found to have a negative impact on child outcomes. Neece and colleagues (2012) found that there is a bidirectional relationship between parenting stress and child behavior problems for both mothers and fathers of children with delays such that the more stress a parent experiences, the worse a child's behavior problems, and vice versa.

Parenting stress and child coping competence also have a bidirectional relationship. Cappa, Begle, Conger, Dumas, and Conger (2011) found that parenting stress negatively contributes to affective, achievement, and social coping competence in preschoolers, and child coping competence predicts parenting stress, even after accounting for child disruptive behavior in typically developing children. This research supports the idea that parental stress, which is in turn linked to marital adjustment and satisfaction has a large impact on child outcomes and therefore both parental and marital stress must be addressed in order to optimize positive childhood adjustment and coping.

Research has given support to the "spillover model," which suggests that parents' marital functioning influences their parenting and co-parenting behavior in family contexts, which likely impacts child behavior. Stroud, Durbin, Wilson, and Mendelsohn (2011) found that marital quality was significantly related to parental warmth, father's responsiveness, and child responsiveness to their mothers. The link between marital functioning and parent responsiveness was stronger for fathers than mothers, regardless of child gender. The study also found that marital distress has a greater impact on fathers' parenting compared to mothers' parenting. Parents' marital functioning was positively linked to the degree of positive affect, warmth, and shared enjoyment. These results suggest that marital relationships between spouses have a significant impact on parenting

behavior and the quality of parent-child relationships, which subsequently impact child behavior problems.

Mindfulness-Based Stress Reduction

While research has shown high levels of stress in parents of children with developmental delays, no study has been done examining the effectiveness of an empirically supported stress reduction program with this population. Mindfulness based stress reduction (MBSR) is an empirically supported stress intervention developed by Jon Kabat-Zinn at UMass Medical Center (Kabat-Zinn et al., 1992). This intervention was initially developed to for management of chronic or untreated pain but currently it is commonly used to manage of stress (Chiesa, & Serretti, 2009; Grossman, Niemann, Schmidt, & Walach, 2004). It has been shown to be very effective in reducing stress levels across a variety of populations and has been shown to have significant health benefits (Grossman, Niemann, Schmidt, & Walach, 2004). To date, this intervention has been used with people suffering from a wide variety of problems including chronic pain, cancer, and anxiety disorders, and with diverse populations such as medical school students and prison inmates (Grossman, Niemann, Schmidt, & Walach, 2004). This appears to be the stress-based intervention that has the most empirical support with over 50 studies demonstrating its effectiveness; however, to date no peer-reviewed article has been published examining whether this intervention can help reduce parenting stress (Chiesa, & Serretti, 2009; Grossman, Niemann, Schmidt, & Walach, 2004).

Although MBSR has not been evaluated as an intervention for parenting stress, studies have supported the efficacy of other mindfulness interventions with parents suggesting that this type of intervention would be feasible and effective with this

population. More specifically, "mindful parenting" interventions have been found to be effective in reducing children's externalizing behavior and attention problems as well as improving children's self-control, compliance, and attunement to others (Bögels et al., 2008; Singh et al., 2009, 2010). This is a manualized parenting intervention that incorporates mindfulness, self-awareness, and intentionality into the parent-child relationship. In contrast to MBSR where the focus is on the parents' personal stress, the focus of this approach is on the parent-child relationship and the intervention teaches parents to identify interactions that result in relational disconnectedness (Placone-Willey, 2002). This intervention has been used with typically developing children with externalizing behavior problems as well as children with autism (Singh et al., 2006). Although these studies support the efficacy of using mindfulness interventions for parents, they generally have small samples and lack random assignment or control groups, suggesting there is still a clear need for research in this area.

The Current Study

The current study further analyzed the relationship between behavior problems and parenting stress and how it relates to marital satisfaction in parents of children with developmental delays. To the author's knowledge, this is the first study to examine the impact of marital satisfaction on a parenting stress reduction intervention, and, therefore, all research questions were exploratory. The questions we examined were: (1) Was marital satisfaction at pre-treatment associated with lower levels of parenting stress, (2) Was marital satisfaction at pre-treatment associated with lower levels of child behavior problems, and (3) Did marital satisfaction moderate changes in parenting stress and/or child behavior problems as a result of the MBSR stress-reduction intervention?

CHAPTER TWO

METHODS

Participants

The current study involved 46 parents who participated in the Mindful Awareness for Parenting Stress (MAPS) Project at Loma Linda University, which included parents of children, ages 2.5 to 5 years old, with developmental delays. Participants were primarily recruited through the Inland Empire Regional Center, although some were recruited through the local newspaper, local elementary schools, and community disability groups. In California, practically all families of individuals with DD receive services from one of nine Regional Centers. Families who met the inclusion criteria were selected by the Regional Center's computer databases and received a letter and brochure informing them of the study. Information about the study was also posted on a website which allowed interested parents to submit their information.

Criteria for inclusion in the study were: (1) Having a child ages 2.5 to 5 years, (2) parent(s) reported child to have a developmental delay as determined by Regional Center (or by an independent assessment), (3) parent(s) reported more than 10 child behavior problems (the recommended cutoff score for determining risk of conduct problems) on the Eyberg Child Behavior Inventory (ECBI; Robinson, Eyberg, & Ross, 1980), (4) the parent was not receiving any form of psychological or behavioral treatment at the time of referral (e.g. counseling, parent training, parent support group, etc.), (5) parent agreed to participate in the intervention, and (6) parent spoke and understood English. Exclusion criteria included parents of children with debilitating physical disabilities or severe intellectual impairments that prevented the child from participating in a parent-child

interaction task that was a part of the larger laboratory assessment protocol (e.g. child is not ambulatory). In order to be included, parents must also have completed all initial measures and attended the initial assessment before the beginning of the first intervention session. Of the ninety-five families that were screened for the study, 63 were determined to be eligible, and 51 parents enrolled in the study originally. Five parents completed the initial assessments but dropped out of the study before the intervention began leaving a final sample of 46 parents. There were no demographic differences between participants who completed the intervention and those who dropped out of the study.

Table 1 depicts the demographics of the current sample. Of the 46 parents who participated in the current study, 21 attended the immediate treatment group and 25 were part of the wait-list control group. In the combined sample, 71.4% of the children were boys. Parents reported 25.7% of the children as Caucasian, 37.1% as Hispanic, 8.6% as Asian, 5.7% as African American, and 22.9% as "Other." The mean age of the children was 3.84 years with a standard deviation of 0.92. The majority of the participating parents were married (71.7%) and were mothers (78.3%). Families reported a range of annual income with 45.7% reporting an annual income of more than $50,000 and incomes ranged from $0 to over $95,000. The average number of years parents completed in school was 14.54 years with a standard deviation of 2.67. The two intervention groups did not significantly differ on any demographic variable assessed.

Regarding the child's diagnosis, the majority of the children (84.8%) were reported to have a diagnosis on the autism spectrum. Among those families who reported their child to have an ASD, most parents (76.8%) said their child's diagnosis was Autistic Disorder, and the remaining children were reported to have another diagnoses on the

autism spectrum. At the time of the intake assessment, 91.3% of the children were reported to receive special education services in school and 78.3% of the children were enrolled in a special education classroom. Although not formally assessed, the majority of children were estimated to have intellectual functioning in the mild to moderate range given the demands of the laboratory assessment. Children had to understand and follow directions in a structured play task in order to be eligible for the study.

Table 1
Demographic Characteristics of Participants by Treatment Group

	Treatment $N = 21$	Control $N = 25$	χ^2 or t
Children			
Gender (% boys)	66.7	76.5	χ^2=.07
Mean Age in Years (SD)	3.59 (.88)	4.12 (.90)	t=1.73
Ethnicity (% Caucasian)	27.8	23.5	χ^2=.00
Participating Parent			
Mean Age in Years (SD)	34.15 (8.71)	36.40 (8.41)	t=.89
Marital Status (% Married)	81.0	64.0	χ^2=.89
Mean Grade in School (SD)	14.86 (2.10)	14.28 (3.90)	t=.73
Family Income (% > $50K)	57.1	36.0	χ^2=1.29

Procedures

Procedures were approved by the Institutional Review Board at Loma Linda University. Interested parents contacted the MAPS project by phone, postcard, or submitting their information on the project website. Study personnel then conducted a phone screen to determine the eligibility of the parent or parents. If the parent met inclusion criteria, an intake laboratory assessment was scheduled. Prior to the initial assessment, parents were mailed a packet of questionnaires that were to be completed before arrival at the assessment.

Interested parents either contacted the MAPS project by phone, returned a postcard requesting the PI to contact them, or submitted their information on the MAPS website. The research team then conducted a phone screen assessing participants' eligibility once the families indicated their interest in participation. If the family met eligibility criteria for the study, an appointment for initial laboratory assessment was scheduled. Prior to the initial laboratory assessment, a packet of questionnaires was mailed to parents for them to complete prior to coming into the lab.

The initial assessment took place in the MAPS lab in the Department of Psychology at Loma Linda University. At this assessment, parents were given an informed consent form that was reviewed by study staff. After completing the informed consent and an interview to collect demographic information, the parents drew a piece of paper out of a box which informed them of whether they were in the immediate treatment or waitlist-control intervention group. Only the parents participating in the study completed the packet.

Parents assigned to the immediate treatment group began intervention in March 2012 and parents assigned to the control group began the intervention in June 2012. The Mindfulness Based Stress Reduction (MBSR) intervention followed the manual outlined by Dr. Jon Kabat-Zinn at the University of Massachusetts Medical Center (Kabat-Zinn, Massion, Kristeller, & Peterson, 1992). This intervention consisted of three main components: (1) didactical material covering the concept of mindfulness, the psychology and physiology of stress and anxiety, and ways in which mindfulness can be implemented in everyday life to facilitate more adaptive responses to challenges and distress, (2) mindfulness exercises during the group meetings and as homework between sessions, and (3) discussion and sharing in pairs and in the larger group. The MBSR program included eight weekly 2-hour sessions, a daylong 6-hour meditation retreat after class 6, and daily home practice based on audio CDs with instruction. Formal mindfulness exercises included the body scan, sitting meditation with awareness of breath, and mindful movement. The instructor for the group had over 20 years experience practicing mindfulness and teaching MBSR, completed the Advanced MBSR Teacher Training at the University of Massachusetts Medical Center, and had received supervision with Senior MBSR Teachers through the Center for Mindfulness at the University of Massachusetts Medical Center.

After the immediate treatment group completed the intervention, parents participated in a second post-treatment assessment (referred to "second assessment" for remainder of paper) and completed the measures again. At that time, the parents assigned to the delayed treatment group also returned to the lab for the same assessment as part of the wait-list control design. After the completion of the project (all assessments were

conducted), parents received a short summary and comparison of their child's behavioral functioning over the course of the intervention in order to reinforce parents' efforts to improve their parenting skills as well as raise awareness of remaining concerns.

Measures

Child Behavior Checklist for Ages 1 ½ - 5 (CBCL, Achenbach, 2000).

The CBCL 1 ½ to 5 was used to assess child behavior problems. The CBCL contains 99 items that are rated as "not true" (0), "somewhat or sometimes true" (1), or "very true or often true" (2). Each item represents a problem behavior, such as "acts too young for age" and "cries a lot." The CBCL yields a total problem score, 2 broad-band externalizing and internalizing scores, and 7 narrow-band scales, and 6 DSM-oriented scales, all of which were used in the present analyses. In the current sample, the mean reliability for the total problem score was α=.93. The CBCL also shows strong convergent validity with both diagnoses based on DSM-IV-TR diagnostic criteria and similar scales measuring child behavior problems (Achenbach, 2000).

Parenting Stress Index – Short Form (Abidin, 1995).

The Parenting Stress Index – Short Form (PSI-SF) was used to assess parenting stress. The PSI-SF contains 36 items that are rated on a 5-point Likert scale ranging from "Strongly Agree" (1) to "Strongly Disagree" (5) and contains three subscales, Parental Distress, Parent-Child Dysfunctional Interaction, and Difficult Child, which are combined into a Total Stress score (Abidin, 1995). The PSI-SF also includes a validity index which measures the extent to which the parent is answering in a way that he/she thinks will make them look best. A score of 10 or less on this index suggests responding

in a defensive manner and indicates that caution should be used in interpreting any of the scores. One participant had a defensive responding score less than 10 at the intake assessment and this score was removed from the present analyses.

We used the Parental Distress subscale, which measures the extent to which the parent is experiencing stress in his or her role as a parent. This subscale was chosen because it assesses parental stress independent of child behavior issues, which were also a key outcome variable of the current investigation. Reliability for the Parental Distress subscale with our sample was α=.83. Parents completed the PSI-SF prior to attending the intake assessment and again in the second assessment.

Dyadic Adjustment Scale-Short Form (DAS-SF, Spanier, 1976)

The DAS-SF is a measure designed to measure satisfaction and quality of a romantic relationship. The 7-item self-report measure contains three items that assess dyadic consensus, three items that assess dyadic cohesion, and one item that assesses global dyadic satisfaction. Dyadic consensus measures agreement on various topics like religion, goals, and household tasks. Dyadic satisfaction asks questions about interpersonal behavior. Dyadic cohesion asks questions about shared activities. Research has shown that these 7 questions could accurately categorize the majority of marriages as distressed or adjusted (Sharpley and Cross, 1982). Several studies have found that the DAS-SF possesses good internal consistency and criterion-related validity when administered as a separate scale or extracted from the full version of the DAS and consider the DAS-SF to be a psychometrically sound measure of marital adjustment (Hunsley, Pinsent, Lefebvre, James-Tanner, & Vito, 1995; Sharpley & Rogers, 1984; Hunsley, Best, Lefebvre, & Vito, 2001). Reliability for the DAS-SF with our sample was

α=.83. Parents completed the DAS-SF prior to attending the intake assessment.

Analysis Plan

Demographic variables listed in Table 1 that had a significant relationship (p<.05) with one or more of the independent variables *and* one or more of the dependent variables would have been tested as covariates in the analyses. However, given that there were no treatment group differences in demographic variables, no covariates were identified for the subsequent analyses.

The distributions of the primary variables were examined at pre-treatment and post-treatment time points (Pre-treatment and assessment 2 and 3 post-treatment for the immediate and control groups respectively). Data points that were more than three standard deviations above or below the mean of a variable were considered to be outliers. As suggested by Cohen, Cohen, West and Aiken (2002), all outliers were set equal to plus or minus 3 standard deviations from the mean in order to reduce the influence of extreme data points on the results. Additionally, demographic variables listed in Table 1 that had a significant relationship (p<. 05) with one or more of the independent variables *and* one or more of the dependent variables would have been tested as covariates in the analyses.

The first research question examining whether marital satisfaction at pre-treatment is associated with lower levels of parenting stress was analyzed by correlating DAS-SF and PSI-SF scores. The second research question investigating whether behavior problems at pre-treatment were associated with lower levels of parenting stress were analyzed by correlating CBCL behavior problems and PSI –SF scores.

The third research question examining marital satisfaction as a moderator of treatment outcomes was analyzed with two hierarchical linear regressions. The first hierarchical linear regression examined marital satisfaction as a moderator of stress reduction. The first step included demographic covariates, the second step included the pre-treatment scores on the PSI-SF, the third step included pre-treatment scores of marital satisfaction using the DAS-SF, and the final step included the interaction term for marital satisfaction and the pre-treatment PSI-SF scores in order to test the moderating effect of marital satisfaction on parental stress outcomes in the stress reduction intervention.

The second hierarchical linear regression examined marital satisfaction as a moderator of reduction in child behavior problems following the MBSR intervention. The first step included demographic covariates, the second step included the pre-treatment scores on the CBCL, the third step included pre-treatment scores of marital satisfaction using the DAS-SF, and the final step included the interaction term for marital satisfaction and the total scores on the CBCL in order to test the moderating effect of marital satisfaction on child behavior problem outcomes in the stress reduction intervention.

CHAPTER 3

RESULTS

Bivariate Associations Between Marital Satisfaction and Parental Stress/Child Behavior Problems

Parents' marital satisfaction was associated with lower levels of parental distress at pre-treatment ($r = -.39$, $p < .05$). Additionally, as shown in table 2, marital satisfaction was significantly associated with lower levels of child behavior problems, including total behavior problems ($r = -.49$, $p < .01$), externalizing problems ($r = -.46$, $p < .01$) and internalizing problems ($r = -.34$, $p < .05$). In examining more specific behavior concerns, marital satisfaction was related to child externalizing problems like ADHD symptoms ($r = -.39$, $p < .01$), aggression ($r = -.44$, $P < .01$), and attention problems ($r = -.35$, $p < .05$) as well as internalizing problems such as anxious/depressed symptoms ($r = -.32$, $P < .05$) and emotional reactivity ($r = -.35$, $p < .05$). Finally, sleep problems were also significantly related to martial satisfaction ($r = -.33$, $p < .05$).

The mean marital satisfaction score reported on the DAS-SF for our study was 20.32. Hunsley, Best, Lefebvre, and Vito (2001) examined the DAS-SF and how it compared to the full DAS by looking at participants who were classified as distressed or nondistressed on the full DAS. The study found that scores above 25 indicate nondistressed marital status, while score below 19 suggest distressed marital status In our sample, the DAS mean score was 20.32, which falls in the middle of the nondistressed

and distressed groups, indicating that the parents in our study do have lower marital satisfaction than a nondistressed population, but not necessarily distressed marriages.

Table 2
Pre-treatment Relationship between Marital Satisfaction and Child Behavior Problems

	DAS-SF Total Marital Satisfaction
Total Problems Subscale	-0.49**
Externalizing Problems Subscale	-0.46**
Aggression Subscale	-0.44**
Attention Problems Subscale	-0.35*
Internalizing Problems Subscale	-0.34*
Emotionally Reactive Subscale	-0.35*
Anxious/Depressed Subscale	-0.32*
Somatic Complaints Subscale	-0.07
Withdrawn Subscale	-0.10
Sleep Problems Subscale	-0.33*
Stress Problems Subscale	-0.32*
DSM IV Codes	
Affective Subscale	-0.28
Anxiety Problems Subscale	-0.24
Pervasive Developmental Problems Subscale	-0.26
Attention Deficit Hyperactivity Problems	-0.39**
Oppositional/Defiant Problems	-0.30*

*p<.05, **p<.01

Changes in Parental Distress and Child Behavior Problems

A paired-samples t-test was used to examine differences in parental distress at intake (pre-treatment) and at post treatment (second assessment for immediate treatment groups and third assessment for waitlist control group). Parents reported significantly lower parental distress scores on the PSI-SF at post-treatment ($_{\text{pre-treatment}}$=37.43, $_{\text{post-treatment}}$=31.35), indicating that the

intervention was successful in reducing parents' self-reported stress ($t=2.73$, $p < .05$, $d= 0.69$).

Parents reported an average parental distress score of 36.93 (83rd percentile) before treatment and an average score of 31.48 (70th percentile) after treatment. On the PSI, scores within the 16th to the 84th percentile are considered in the normal range, scores within the 85th to 89th percentile are considered in the high range, and scores in the 90th percentile or higher are considered in the clinically significant range. Parents in our sample on average started with stress levels in the high end of normal range and dropped to stress levels within the moderately high normal range.

Paired samples t-tests were also used to examine differences in child behavior problems at intake and post-treatment. Children were reported to have significantly fewer total child behavior problems on the CBCL at the second assessment ($_{\text{pre-treatment}}$=71.26, $_{\text{post-treatment}}$=61.89) compared to the intake assessment (t=2.47, $p < .05$, d=0.36).

Parents reported an average total problems score of 70.58 (t-score=66.6) before treatment and an average score of 61.17 (t-score=33.8) after treatment. Parents reported their children had child behavior problems in the clinical range before treatment. After treatment, parents reported behavior problems within the normal range.

Moderation Analyses

An analysis was run to determine if marital satisfaction moderated parent's reduction in parental distress from pre to post-treatment. Results are presented in Table 3. Marital satisfaction did not significantly moderate changes in parental distress over the course of the intervention (F (1, 21)= .117, p=. 736). The moderation relationship is presented in Figure 1. Parents experienced similar reductions in parental distress from pre-treatment to post treatment regardless of their level of marital satisfaction.

We conducted a second analysis to determine if marital satisfaction moderated the reduction in child behavior problems from pre-treatment to post-treatment. Results are also presented in Table 3. Marital satisfaction significantly moderated changes in child behavior problems from pre-treatment to post-treatment ($F(1, 24) = .5.12$, $p < .05$). The moderation relationship is depicted in Figure 2. Parents with high marital satisfaction reported few child behavior problems both pre- and post-treatment and reported little changes in behavior problems across the intervention. However, parents with low marital satisfaction, reported high levels of child behavior problems pre-treatment, which were significantly reduced at post-treatment. Therefore, reduction of child behavior problems is most significant for parents with low marital satisfaction.

Table 3
Moderation of Parental Distress and Child Behavior Problems

Scale	df	F	ŋ	p
PSI-SF Parental Distress Subscale	1	.117	6.96	.736
CBCL Total Problems Subscale	1	5.12*	887.98	.033*

*p<.05

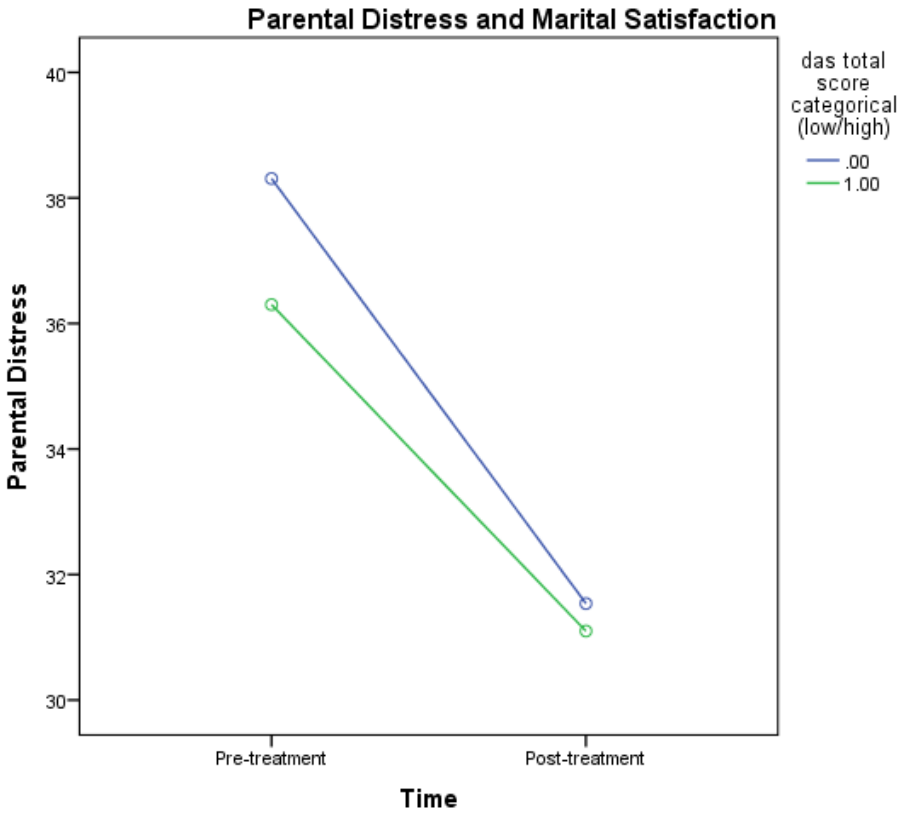

Figure 1. Moderation of Parental Distress. This figure illustrates how marital satisfaction interacts with levels of parental distress from pre-treatment to post-treatment.

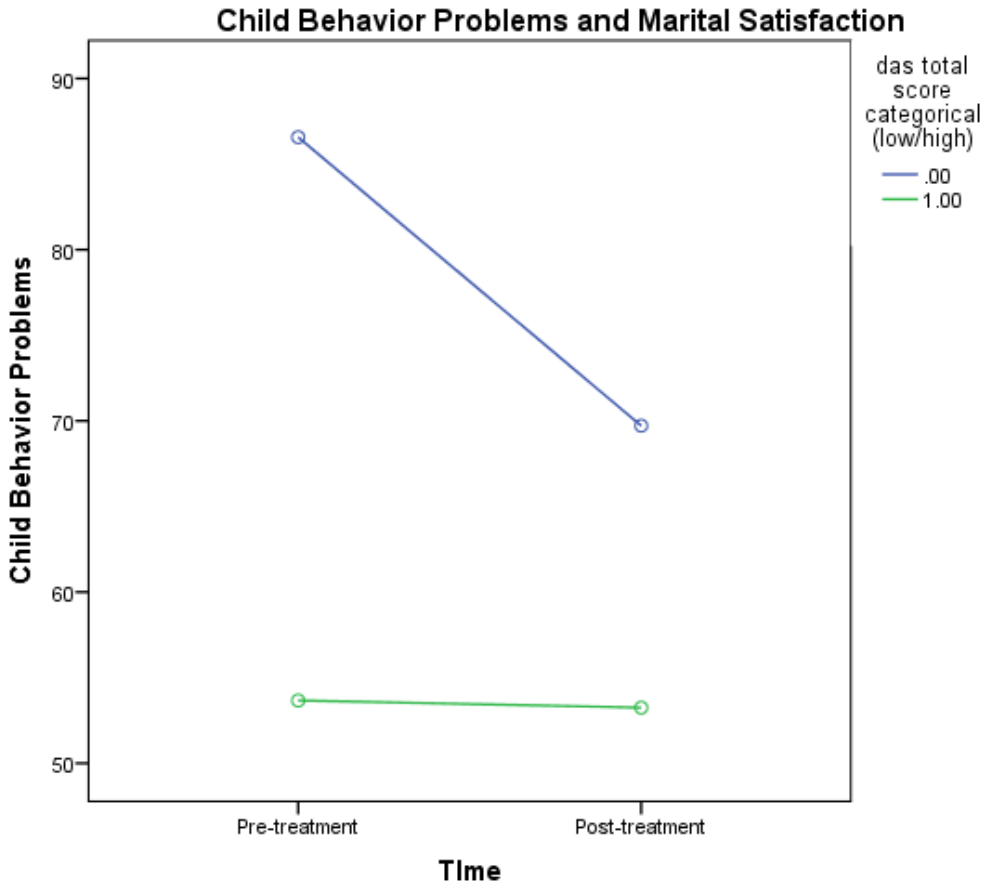

Figure 2. Moderation of Child Behavior Problems. This figure illustrates how marital satisfaction interacts with levels of child behavior problems from pre-treatment to post-treatment.

CHAPTER 4

DISCUSSION

The current study examined pre-post changes in parental distress and child behavior problems following an MBSR intervention for parents of children with DD. Additionally, we investigated whether marital satisfaction moderated the reduction of parenting stress and child behavior problems following a mindfulness-based stress reduction intervention. To the author's knowledge this is the first study to examine the impact of marital satisfaction on the outcomes of parenting stress reduction intervention, and results suggest that marital satisfaction does play an important moderating role, specifically regarding the impact of changes in parental stress on the child.

Parent's self-reported marital satisfaction (DAS-SF) was significantly related to pre-treatment levels of parental distress and child behavior problems. Following the MBSR intervention, parents reported significantly lower levels of parental distress suggesting that the intervention was successful in reducing parents' self-reported stress. Additionally, parents reported that their children had significantly fewer child behavior problems (CBCL) after the intervention, indicating the intervention was successful at reducing child behavior problems. Marital satisfaction did not significantly moderate parental distress outcomes; parents reported similar levels of stress reduction from pre-treatment to post-treatment, regardless of their level of marital satisfaction. However, marital satisfaction did moderate changes in child behavior problems over the course of the intervention. Parents with high marital satisfaction reported few child behavior problems both pre- and post-treatment and reported little changes in behavior problems across the intervention, while parents with lower marital satisfaction reported high levels

of child behavior problems pre-treatment, which decreased significantly by the end of the intervention. Overall, these results suggest that marital satisfaction is an important variable in the relationship between parenting stress and child behavior problems.

Marital satisfaction did not significantly moderate changes in parenting stress throughout the course of the intervention. There are several possible reasons for this. The sample size of the study was relatively small, and therefore there may not have been enough power to demonstrate a significant moderation effect. However, the results may also be indicative of a true lack of a moderating relationship. The results indicate that a parent's level of marital satisfaction when they enter the study does not impact their stress. Research has shown that marital satisfaction is tied to lower parental stress and is seen as a protective factor. The current research, however, shows that regardless of marital satisfaction families of children with DD have high levels of parental stress. This may be due to the severity of the family population examined in this study. Parents who participated in the study have at least one child with a developmental delay, most commonly Autism, and also reported high levels of child behavior problems. Research has shown that these types of families typically have elevated levels of stress in general, which may be attributed more to the stress of raising a child with severe behavior problems than to marital satisfaction.

Marital satisfaction significantly moderated changes in child behavior problems throughout the study. Parents with lower marital satisfaction reported higher levels of child behavior problems at the beginning of the study and showed significant reductions in child behavior problems at the completion of the study. In contrast, parents with high levels of marital satisfaction at the beginning of the study reported significantly fewer

child behavior problems, and therefore the reduction of child behavior problems was much smaller. Marital satisfaction is very closely related to child behavior problems. This finding is supported by other literature, which has shown that marital quality is predictive of later child behavior problems (Wieland & Baker, 2010).

Parents with high marital satisfaction still experienced a reduction in stress to the same degree as those with low marital satisfaction, so although they have similar changes in stress there must be some different process that unfolds in the family which leads to changes in behavior problems for those with low marital satisfaction and not for those with high marital satisfaction. Marital satisfaction does not seem to impact intervention outcomes with respect to parental stress but it does impact the indirect effect of the intervention on child behavior problems. This seems to indicate that marital stress and parenting stress are different constructs and while both likely influence parenting and child behavior problems, they need to be examined separately.

There are several possible explanations for the influence of marital satisfaction on reduction of child behavior problems. Previous research has demonstrated that marital quality is significantly related parental warmth and parent's responsiveness to their child (Stroud, Durbin, Wilson, & Mendelsohn, 2011). The MBSR intervention promotes awareness of what is going on both internally and in others. This in turn may lead to higher responsiveness and warmth towards their children, which can translate to higher sensitivity to the child's needs.

Marital satisfaction may also influence reductions in child behavior problems due to an increased consistency in parenting style between parents. Throughout the intervention, parents with lower marital satisfaction may learn to be more aware of their

parenting style, as well as the parenting style of their partner, which in turn could lead to more consistent parenting and a decrease in behavior problems. Parents who report high marital satisfaction at the start of the study are likely already more consistent in regards to parenting, which may be why they reported lower levels of child behavior problems at the beginning of the study.

Parents with low marital satisfaction may also be externalizing their distress and focusing more on their child's behavior and creating a more hostile home environment. A study done by McHale (1995) found that family interaction patterns were linked to marital dynamics for children even younger than one year. Specifically, the study found that parents with higher marital distress had higher levels hostility/competitiveness between parents and lower warmth and cooperation between parents. This indicates that parents with low marital satisfaction may be projected their distress into the family dynamic, which in turn leads to child behavior problems. During the intervention, parents learn to become more aware of their distress and where this distress stems from, and then in turn may learn better ways to cope with their distress rather than externalizing it. The family dynamic may then improve and lead to reductions in reported child behavior problems.

Another possible explanation for the influence of marital satisfaction on reductions in child behavior problems is actual changes in marital satisfaction that occurred throughout the study. During the intervention, through increased awareness of distress in their marriages 2 parents decided to get divorced. Parents that stayed married through the intervention reported an increase in marital satisfaction ($_{\text{pre-treatment}}$=22.24, $_{\text{post-treatment}}$=23.38, t=1.85, p=.07, d=0.20), indicating a trend towards higher marital

satisfaction as a result of the intervention. This may in turn have increased consistency between parents and led to a trickle effect where the other spouse became more aware of their parenting style and both parents were able to better co-parent, which then led to reductions in behavior problems. This finding is supported by previous research on the "spillover model," which suggests that parents' marital satisfaction influences parenting and co-parenting in family contexts (Stroud, Durbin, Wilson, & Mendelsohn, 2011). Examining the specific mechanisms through which marital satisfaction impacts behavior problems is an important direction for future research.

Marital satisfaction was significantly correlated with both internalizing and externalizing behavior problems. Specifically, marital satisfaction was correlated with child externalizing problems like ADHD symptoms, aggression, and attention problems, as well as anxious/depressed symptoms, emotional reactivity, and sleep problems. However, marital satisfaction was not significantly correlated with affective problems, anxiety problems, pervasive developmental problems, somatic complaints, or symptoms of withdrawal. There are several possible explanations for this. The small sample size of the study may have limited the power and thus the correlations were not significant even though marital satisfaction is correlated with these behavior problems. However, it may be that marital satisfaction is associated with certain behavior problems more than others. McMahon, and Ungerer (2007) examined the effect of maternal depression and marital adjustment on young children's internalizing and externalizing behavior problems and found that marital satisfaction was significantly related to externalizing behavior problems, but not internalizing behavior problems. In our sample, the correlation between marital satisfaction and externalizing behavior problems was stronger than the correlation

between marital satisfaction and internalizing behavior problems and this seems even more evident when examining individual subscales.

Emotion dysregulation may be a potential mediator in the relationship between marital satisfaction and child behavior problems. Emotion regulation has been defined as "extrinsic and intrinsic processes responsible for monitoring, evaluating and modifying emotional reactions, especially their intensive and temporal features, to accomplish one's goals" (Thompson, 1994). Emotion dysregulation has been associated with both internalizing and externalizing problems in early childhood and into adolescence (Bariola, Gullone, & Hughes, 2011; Buckner, Mezzacappa, & Beardslee, 2003; Eisenberg et al, 2001; Sheeber, Allen, Davis, & Sorensen, 2000; Silk, Steinberg, & Morris, 2003). Specifically, subscales that were correlated with marital satisfaction such as aggression, attention problems, anxious/depressed symptoms, and emotion reactivity all tie into emotion regulation.

Research indicates that parent emotion socialization factors play an important role in children's ability to regulate their emotions (Bariola, Gullone, & Hughes, 2011). Factors such as parental responsiveness to children's displays of emotion, parenting styles (hostile/controlling vs. warm/caring), parent emotional expression, and parent emotion regulation (Cassano, Perry-Parrish, & Zeman, 2007; Eisenberg, et al., 1999; Jaffe, Gullone, & Hughes, 2010; McDowell, Kim, O'Neil, & Park, 2002; Morris, et al., 2002; Morris, et al., 2007; Yap, Allen, & Ladouceur, 2008). Marital satisfaction is tied to parent warmth and responsiveness, which influences child outcomes (Stroud, Durbin, Wilson, and Mendelsohn, 2011). Marital satisfaction may influence parent responsiveness and warmth, which in turn affects child emotion regulation and child

outcomes. A parent in an unhappy marriage may be less responsive to their child, which could lead to poor emotion regulation in the child and the child may develop behavior problems. In our intervention, we focus on being mindful, which encourages parents to be very responsive and in tune with their child and to react calmly. Parents who learn this and practice it with their children may be improving their child's emotion regulation skills, which then leads to fewer reported behavior problems. Future research should examine the mediating role that emotion regulation may play in whether marital satisfaction is associated with certain behavior problems more than others and how parent characteristics impact reductions in child behavior problems in a stress reduction intervention.

Although the findings in this study were promising, these findings must be considered within the context of several study limitations. The sample size of the study was relatively small, and therefore the power and effect size of the results were reduced. This may have impacted our ability to find smaller but still significant effect sizes, such as the relationship between marital satisfaction and parenting stress. Additionally, there was no control group to compare to in this study. The current study relied on parent report data of marital satisfaction, parental stress, and child behavior problems and reporting biases may have influenced the results. Future studies should include additional reports of marital satisfaction (from spouses), child behavior problems (from other parent/family member as well as teachers), and observational measures of stress to support these findings.

The Dyadic Adjustment Scale (DAS-SF) has some limitations as well. The DAS-SF has been found to have good internal consistency and reliability (Graham, Liu, &

Jeziorski, 2006). However, the DAS-SF is a measure of relationship quality, not just relationship satisfaction as it is often used. Therefore, one should interpret scores on the DAS-SF with this in mind (Graham, Liu, & Jeziorski, 2006).

It is important for future research to further examine the relationship between marital satisfaction and parenting stress and child behavior problems. A study with a large sample size and active control group should examine how an MSBR intervention impacts marital satisfaction and marital status. It is complicated to understand the impact of this intervention on marital quality because the association between stress and marital quality is not necessarily linear (Ledermann, et al., 2010). For those with poor marital satisfaction, the intervention may reduce stress and create opportunities through awareness to work on the relationship, to be more appreciative of the relationship, or to end the marital relationship. Future research should look closely at this relationship, as it may be hard to disentangle. Future research should also examine these findings separately in mothers and fathers, given previous research findings that the link between marital functioning and parent responsiveness was stronger for fathers than mothers and marital distress has a greater impact on fathers' parenting compared to mothers' parenting (Stroud, et al., 2011).

Despite these limitations, the implications of this study are significant. This study highlights the important role that marital satisfaction plays in the relationship between parental stress and child behavior problems. Parents' mental health and relationship satisfaction has a significant impact on children's development. Therefore, interventions aimed at helping children must also consider the parental marital relationship and make it a focus of treatment.

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