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A Mindfulness-Based Intervention to Improve Family Functioning Among Child Welfare-Involved Families with Substance Use

Abstract

Despite the frequent co-occurrence of parental substance misuse and child maltreatment, the field lacks feasible and effective intervention and strategies designed to meet the complex needs of child welfare-involved families with substance misuse. Mindfulness demonstrates promise in cultivating awareness and self-regulatory capacities, thereby reducing stress and substance use and improving parent-child interactions. The purpose of this mixed methods, randomized clinical trial was to evaluate the feasibility and acceptability of Mindfulness-Oriented Recovery Enhancement adapted for child welfare families (MORE-CW), and to test initial treatment effects on proximal (i.e., parental stress, autonomic activity during a stress-induced state and recovery [heart rate variability], coping, and mindfulness) and distal (i.e., parental substance misuse, child maltreatment potential, parent-child relationships, and child well-being) domains of family functioning. The final sample consisted of 21 child welfare-involved parents with children aged 0-18, recruited through child welfare caseworker and health department nurse referral.

The feasibility and acceptability component of the study was determined by the proportion of families recruited, randomized, and retained, and by participant satisfaction. Enrollment included 33 parents, 28 of which were randomly assigned to either the experimental ($n = 15$) or wait-list control group ($n = 13$). Of those assigned to the intervention group, 73% completed the program. Acceptability was determined by a program satisfaction survey and qualitative feedback. Findings show that the program was well-received and highly rated by participants, indicating that MORE-CW is a viable form of intervention for this sample.

Outcomes were assessed at pre- and post-assessment as well as during weekly intervention sessions. Independent samples t-tests on difference scores (post assessment - pre assessment) indicated several significant between-group effects, with MORE-CW reducing parenting stress, child abuse potential, and child behavior problems, and improving mindfulness. Moreover, results of the repeated measures ANCOVAs indicated statistically significant group by time differences on participant heart rate variability from pre- to post-assessment. There were no significant between-group differences with regard to coping, substance misuse, and parent-child relationships.

Qualitatively, intervention participants were queried at the start of each session regarding experiences of stress and use of mindfulness-based coping and parenting techniques. Themes that emerged from participant narratives included stressors from physical health, finances, personal relationships, and competing pressures from service providers. With regard to mindful practice, participants most frequently used mindful breathing and reappraisal to reduce distress and increased attention to children's needs.

In sum, this preliminary study shows promising support for the feasibility, acceptability, and preliminary effectiveness of MORE-CW for improving multiple domains of family functioning among child welfare-involved families with substance misuse. Future research efforts may benefit from further program development and evaluation, and replication studies with larger sample sizes.

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by

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CHAPTER ONE: INTRODUCTION

Parental substance misuse is a significant public health concern and places families at an increased risk for involvement in the child welfare system (Barth, Gibbons, & Guo, 2006). Estimates suggest that between 50% and 70% of parents who have been found to abuse and neglect their children have evidenced substance use (National Center on Addiction and Substance Abuse at Columbia University, 2005; U.S. Department of Health and Human Services, 1999). Stress often underlies both child maltreatment and parental substance use, and the co-occurrence of these issues may lead to deleterious consequences impacting child and family functioning (Chaplin & Sinha, 2013). In the context of child welfare, maltreated children of parents with substance misuse often have multiple placement changes and remain in the child welfare system longer (U.S. Department of Health and Human Services, National Clearinghouse on Child Abuse and Neglect, 2003), are more likely to have a parent whose rights are terminated (Harris-McKoy, Meyer, McWey, & Henderson, 2014), and experience worse developmental, behavioral and mental health outcomes compared to other children in the system (Conners et al., 2004).

Despite the common co-occurrence of substance use and maltreatment, the field lacks feasible and effective intervention strategies designed to meet the complex needs of child welfare-involved families with substance misuse. Few child welfare agencies and

substance abuse treatment programs are ready to address the multiple problems associated with parental substance misuse (McAlpine, Marshall, & Doran, 2001). Though there has been progress in the development of integrated services (i.e., programs that address both parenting and substance use) for substance-misusing parents involved in the child welfare system (e.g., *Strengthening Families Program*; Kumpfer, Whiteside, Greene, & Allen, 2010), many child welfare-involved families are often prescribed an assortment of “cookie-cutter” approaches to treatment, such as providing pre-existing service plans to families (e.g., selected from a template of services that may not be individually tailored to each family). Such responses fail to include tailored programs that meet the specific needs of families and identify their unique strengths (Fedoravicius, McMillen, Rowe, Kagotho, & Ware, 2008; The National Technical Assistance and Evaluation Center, Children’s Bureau, 2008). Among the preventive programs that have been evaluated in child welfare, researchers have found little effect on child maltreatment or the many risk factors associated with abuse and neglect (Klevens & Whitaker, 2007). In addition, few child welfare-specific parenting programs have the concurrent goal of addressing substance misuse and its underlying causes; therefore, substance misuse and parenting interventions are generally implemented in isolation (Donohue, Romero, & Hill, 2006; Marsh, Smith, & Bruni, 2011). This may in turn be challenging for families as they have to manage multiple appointments and service requirements.

The search for integrated models to successfully address the underlying mechanisms implicated in both parenting and substance misuse has gained growing attention. Specifically, stress and maladaptive coping have been shown to serve as precursors to both addiction and punitive or neglectful parenting (Pinderhughes, Dodge,

Bates, Pettit, & Zelli, 2000; Sinha, 2001). Fostering everyday mindfulness is one possible approach to reduce stress and improve coping (Weinstein, Brown, & Ryan, 2009). Thus, cultivating mindfulness may in turn affect positive changes in the context of addiction and parenting. In both of these fields, mindfulness-based interventions are becoming increasingly suggested as a potentially beneficial approach (Duncan, Coatsworth, & Greenberg, 2009a; Zgierska et al., 2009). Mindfulness is commonly conceptualized as the development of awareness to present moment experiences with an attitude of acceptance and non-judgment (Kabat-Zinn, 1994). Mindfulness originates in the Buddhist tradition and is commonly known as a key element of contemplative practice (e.g., sitting meditation, yoga; Brown & Ryan, 2003). Recent theories of mindfulness suggest it is not only cultivated by contemplative practice (Bishop et al., 2004), but also is an inherent human disposition that can be enhanced to reduce the physical and emotional burden related to some medical and psychological conditions (Brown & Ryan, 2003; Brown, Ryan, & Creswell, 2007; Chiesa & Serretti, 2009, 2010), as well as improve interpersonal relationships (Carson, Carson, Gil, & Baucom, 2004; Dumas, 2005). Mindfulness-Oriented Recovery Enhancement (MORE; Garland, 2013) is one effective mindfulness-based intervention associated with reduced substance use and stress (Garland, Gaylord, Boettiger, & Howard, 2010; Garland et al., 2014; Garland & Roberts-Lewis, 2013). MORE is a mental training program that incorporates aspects of mindfulness training, cognitive-behavioral therapy, and positive psychology to provide individuals with skills to reduce stressors and strengthen self-regulatory capacities (Garland, 2013).

The aim of the present study was to develop and pilot test an intervention that integrates three core components of the MORE manual-based curriculum (i.e., cognitive

reappraisal, savoring, and mindfulness) with additional elements created by the principal investigator designed to specifically address mindful parenting including attending to children's needs and bringing awareness to the parent-child relationship. This integrated approach addressed the underlying mechanisms (stress and coping) for both problems (substance use and child maltreatment), and was theorized to offer significant advantages over traditional approaches for treating substance misuse and parenting in isolation. In partnership with two public child welfare agencies and a local health department, this mixed methods, randomized clinical trial tested the feasibility and acceptability of implementing Mindfulness-Oriented Recovery Enhancement adapted for child welfare families (MORE-CW). Moreover, trends in initial treatment effects on proximal (i.e., parental stress, autonomic activity during stress-induced state and recovery as evidenced by heart rate variability [HRV], coping, and mindfulness) and distal (i.e., parental risk of substance misuse and child maltreatment potential, parent-child relationships, and child well-being) domains of family functioning were assessed.

CHAPTER TWO: LITERATURE REVIEW

Overlap in Substance Misuse and Child Maltreatment

Parents who misuse substances are more likely to experience multiple problems that may weaken their ability to care for their children and increase risk of child welfare involvement (Nair, Schuler, Black, Kettinger, & Harrington, 2003). In a 2012 survey of the national protection service agencies, there were approximately 679,000 instances of confirmed child maltreatment (U.S. Department of Health and Human Services, Administration for Children and Families, Children's Bureau, 2013). Estimates of substance-misusing families involved with child welfare often vary due to factors such as the population studied (e.g., in-home versus out-of-home), how substance misuse is defined and measured, the method to determine substance involvement (e.g., risk assessment versus case reviews), or whether the substance use is a primary or secondary contributing factor in the child protection case (National Center on Substance Abuse and Child Welfare, n.d.; Young, Boles, & Otero, 2007). Published reports cite that up to two-thirds of child welfare cases involve parental substance use (Traube, 2012). Estimates also indicate that parents with identified substance use disorders are 2.7 times more likely to be reported for abusive, and 4.2 times more likely to be reported for neglectful, behavior toward their children (National Center on Addiction and Substance Abuse at Columbia University, 2005).

Stress serves as a shared precipitant to both substance misuse and child maltreatment, suggesting stress may operate as a mechanistic link between substance misuse and child maltreatment. Compared to non-substance misusers, substance-misusing parents experience higher cumulative stressors that are shown to negatively impact parenting, which in turn places these families at an increased risk for child welfare involvement (Curenton, McWey, & Bolen, 2009; Nair et al., 2003). Parental stress and substance misuse have been linked to low frustration tolerance (Cicchetti & Olsen, 1990); increased anger reactivity, rigidity, and intrusiveness in parenting (Burns, Chethik, Burns, & Clark, 1991); authoritarian parenting attitudes (Bauman & Levine, 1986; Hien & Honeyman, 2000); and faulty expectations regarding child development (Donohue et al., 2006).

Some research indicates that substance misuse may interfere with parenting judgment. Substance use can lead parents to primarily focus on obtaining and using substances, contributing to parental disengagement with their children and poor parent-child attachments (Ammerman, Kolko, Kirisci, Blackson, & Dawes, 1999; Donohue et al., 2006). Furthermore, many substances contribute to violence, paranoia, and hostility, which leads to chaotic and unsafe home environments (Wells, 2009). When parenting skills suffer, parents' abilities to respond to their children's need for nurturing and consistent care and supervision are often impaired (Magura & Laudet, 1996; Wells, 2009). In addition, homes characterized by stress and substance misuse are often troubled with other problems, including domestic violence, criminal activity, and inadequate

social support (Wells, 2009), which in turn reduce family functioning and increase risk of maltreatment.

The co-occurrence of parental substance misuse and child maltreatment is linked to a range of long-term consequences for children, many quite serious. Among the most serious outcomes, parental substance misuse has been found to be a factor in approximately two-thirds of child maltreatment fatalities (Reid, Macchetto, & Foster, 1999). Other consequences for children of substance-misusing parents include an increased risk of poor child development outcomes including lower cognitive functioning, poor health and attention problems, and higher rates of aggression, anxiety, and depression, compared to children of non-substance-misusing parents (Conners et al., 2004; McNichol & Tash, 2001; Osborne & Berger, 2008). These children are also more likely to engage in future substance use (Zlotnick, Tam, & Robertson, 2004). When high levels of parenting stress are additionally present, children's existing behavior problems may be further exacerbated (Margalit & Kleitman, 2006), which may intensify the risk for maltreatment.

Societal costs are also associated with substance misuse and child maltreatment. An estimated \$258 million is spent per day on child maltreatment services, with a significant percentage of costs (70%) linked to reducing parental substance misuse (Gaudin, 1993; U.S. Department of Health and Human Services, Administration on Children, Youth, and Families, 2007). Costs accrued across States to address substance use in child welfare has amounted to approximately \$5.3 billion annually (National Center on Substance Abuse at Columbia University, 2001). Furthermore, in approximately 65% to 74% of child protective cases, substance-misusing parents are

required to complete alcohol or drug treatment; however, many parents who begin treatment tend not to complete it (Child Welfare League of America, 1997; U.S. General Accounting Office, 1998).

There are additional costs related to children's exposure to both maltreatment and substance misuse. Since these children are more likely to be placed in foster care and remain in placement longer than those from non-substance-misusing families (U.S. Department of Health and Human Services, National Clearinghouse on Child Abuse and Neglect, 2003), significant long-term costs often accrue as these youth are at later risk for unemployment, insufficient education, and homelessness (McMillen & Tucker, 1999; Zlotnick, Robertson, & Wright, 1999). In addition, children exposed to parental substance misuse and maltreatment may require special services, including interventions for cognitive and academic delays or behavior and mental health problems, which are estimated to cost \$42 million to \$352 million per year (Delaney-Black et al., 1998). This economic burden, coupled with the deleterious outcomes for children and families, argues for the importance of developing programs that address the shared precipitants to maladaptive parenting and substance misuse.

Gaps in Child Welfare and Substance Use Interventions

In spite of the relatively large availability of treatments for child welfare-involved families and substance misuse, independently, treatment of substance misuse and concomitant parenting remain unsatisfactory. In general, programs that incorporate trauma-focused cognitive behavioral therapy, home visitation, or behavioral parenting training have, to some degree, been found to produce positive outcomes for families

involved in child welfare (Chemtob, Griffing, Tullberg, Roberts, & Ellis, 2011; Osterling & Austin, 2008). However, it is well-documented that parents of both substance misuse and child welfare service systems have multiple co-occurring problems (Grella, Hser, & Huang, 2006; Hser & Niv, 2006), but these systems have traditionally applied a limited amount of assessment and treatment that is generally only focused on one problem (Marsh et al., 2011), which may subsequently lead to uncoordinated care and financial burden for families.

Substance use programs have often narrowed the focus of assessment and treatment to alcohol and other drug problems, and are inadequately prepared to manage issues specific to parenting stress and maltreatment (Donohue et al., 2006; Marsh et al., 2011). Treatment success in substance abuse programs is often determined by parental abstinence, though, as research reveals, relapse is often a part of the recovery process (Laudet, Savage, & Mahmood, 2002). Consequently, relapse may jeopardize parental reunification with children. Specifically, the child welfare system's emphasis is to protect children by separating them from their families when safety and risk factors are present, which can include new allegations of substance misuse (Marsh et al., 2011).

On the other hand, child welfare programs have generally focused on the promotion of a safe and stable environment through acceptable parenting practices (Marsh et al., 2011). Nevertheless, parenting programs specializing in the treatment of abuse and neglect often exclude substance-misusing parents (e.g., Agency for Healthcare Research and Quality, 2013). Conversely, they are referred to outside agencies for the treatment of substance misuse and other co-occurring issues. These parents may consequently experience multiple expectations regarding addiction and parenting that

may be inconsistent with one another. For example, following the implementation of the Adoption and Safe Families Act (ASFA), child protection agencies are motivated to expedite reunification and case closure. To meet these deadlines, families are required to show reasonable progress toward service plan goals, and one way to measure this success is through the demonstration of competent parenting and abstinence (Marsh et al., 2011). Yet, the deadlines associated with the requirements of ASFA are inconsistent with research supporting addiction. Namely, the length of time substance use treatment may be required in order to attain lasting positive outcomes is far longer than the current time limits imposed by child welfare (Conners, Grant, Crone, & Whiteside-Mansell, 2006). The disconnect between service goals and moving cases too quickly to reunification may in turn create obstacles for treatment success and lead to long-term negative consequences, such as high re-entry rates to child protective services (Terling, 1999).

Child welfare-involved parents with substance misuse also face additional stressors that may hinder engagement and retention into treatment, such as conflicts between multiple appointments at different agencies, transportation, and child care difficulties (Kemp, Marcenko, Hoagwood, & Vesneski, 2009). Furthermore, most programs aimed to target parenting and substance misuse are delivered in group settings, and research finds that marginalized families benefit significantly more from individually delivered parent training compared to group delivery (Lundahl, Risser, & Lovejoy, 2006). Thus, when co-occurring substance misuse and parenting-related concerns are present, individualized programs are needed in order to match the unique needs of each family.

Research demonstrates that, when substance misuse and parenting services are provided separately, poor child and family outcomes are likely to ensue (Lundgren, Schilling, & Peloquin, 2005; Marsh et al., 2011; Rockhill, Green, & Newton-Curtis, 2008). For example, when there is a lack of coordination and integration between services, children from substance-misusing families are more likely to be placed in out-of-home care and experience slower reunifications and case closures (Rockhill, Green, & Furrer, 2007). A growing body of evidence demonstrates that improvements in child welfare outcomes result when child welfare services and substance use treatment are integrated within the same service setting (Marsh et al., 2011). However, child welfare and substance use agencies may have conflicting service goals. In child welfare, the view is that integration of services should encourage safety, permanency, and well-being of the child through the promotion of appropriate parenting (Barth et al., 2006). From the viewpoint of substance abuse treatment, services should promote opportunities that provide parents with the prospect for recovery (Barth et al., 2006). Despite the high co-occurrence of substance misuse and child maltreatment, there is nevertheless surprisingly little empirical research that examines the effectiveness of substance use and *concurrent* parenting interventions in child welfare. Child welfare systems may therefore benefit from program models that blend the treatments of substance misuse and parenting by addressing their shared precipitants.

Despite extant evidence suggesting specific treatment approaches work best for different types of substance misusers, such knowledge remains infrequently used in child welfare service planning and provision (Lundgren et al., 2005). Neuroscience research also highlights the importance of treatment approaches that address the full complexity of

stress-related problems (National Institute on Drug Abuse, 2007). These approaches involve a variety of different treatment modalities (e.g., medication management, targeted intensive cognitive training) in which parents might benefit. Yet, child welfare-involved parents are rarely referred to them (Choi & Ryan, 2006). The majority of treatments to which parents are referred target conscious decision-making and motivational processes. However, substance use and other maladaptive coping habits are often driven by unconscious systems in the brain (Dani & Montague, 2007; National Institute of Health, 2007). These brain systems have been found to control automatic and habitual behaviors that may be overlooked in traditional treatment approaches. As such, less consistent findings have been found regarding the effectiveness of interventions with substance-misusing parents involved in child welfare compared to those in the general population (Gregoire & Schultz, 2001).

Mindfulness as a Treatment Approach in Child Welfare

In response to the needs of child welfare-involved families with substance misuse, increased attention has been given to improving services and ensuring these families have access to appropriate treatment programs to meet their unique needs (Larsen, 2000; Semidei, Radel, & Nolan, 2001). Although system changes, such as co-training of child welfare and substance abuse providers have occurred, research examining the relationship between substance abuse treatment experiences and child welfare outcomes evidences mixed results (Green, Rockhill, & Furrer, 2007). This may be due, in part, to a dearth of intervention approaches that target the underlying mechanisms implicated in stress-induced substance misuse and child maltreatment as well as an emphasis on

improving the use of evidence-based interventions rather than exploring the feasibility of providing novel approaches to address the multiple needs of families.

A growing body of research indicates that mindfulness may serve as a protective factor against the effects of difficult and stressful life events by cultivating present moment awareness and nonjudgmental acceptance (Bishop et al., 2004; Kabat-Zinn, 1994). Mindfulness has been characterized as encompassing five subparts including *acting with awareness* (i.e., engaging fully in one's current experience), *observing* (i.e., intentionally centering attention on internal and external stimuli), *describing* (i.e., putting experiences into words), *non-reactivity to inner experience* (i.e., allowing thoughts and feelings to fluctuate and employing self-regulatory capacities), and *non-judging of inner experience* (i.e., abstaining from negative evaluation of experience; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006).

Existing evidence suggests that these mindfulness skills can disrupt automatic thinking and behavior and alter the stress process. Some authors suggest (e.g., Weinstein et al., 2009) that this is accomplished by weakening negative appraisals of stress and facilitating the use of adaptive forms of coping in contrast to maladaptive coping habits. In the context of parenting, mindfulness can also help parents attend to their children's needs and exercise self-regulation in order to facilitate more stability and enjoyment in the parent-child relationship (Duncan et al., 2009a; Singh et al., 2010). Mindfulness-based interventions may thus serve as a novel intervention that addresses both substance misuse and parenting stress within the context of child welfare.

Mindfulness training has gained scientific support as an effective intervention over the past several years. As suggested by Weinstein et al. (2009), mindfulness-based

interventions may help to reduce stress and substance use and improve overall well-being. Brown and Ryan (2003) found that mindful individuals experience lower levels of stress and psychological disturbance. Tang and colleagues (2007) indicated significant changes in physiological stress reactivity as evidenced by decreases in stress-related cortisol levels after mindfulness training. Specifically, Mindfulness-Oriented Recovery Enhancement (Garland, 2013), Mindfulness-Based Relapse Prevention (Bowen, Chawla, Collins, Witkiewitz, Hsu, Grow, & Marlatt, 2009), and other mindfulness-based interventions have been shown to effectively reduce psychological (Carlson, Speca, Patel, & Goodey, 2003) and physiological reactivity to stressors and substance abuse relapse in adults (Bowen et al., 2006; Garland et al., 2010). Studies employing these mindfulness programs thus provide empirical evidence to demonstrate the potential benefit of mindfulness in disrupting the continuation of automatic behavior and cognitions in order to enhance overall quality of life (Dumas, 2005; Ostafin, Kassman, & Wessel, 2013; Shapiro, Carlson, Astin, & Freedman, 2006).

A key advancement in mindfulness interventions is the extension to interpersonal relationships, specifically within the social context of parent-child relationships (Duncan et al., 2009b). Kabat-Zinn and Kabat-Zinn (1997) posit that being mindful is a fundamental parenting skill, and the use of mindfulness can strengthen parents' interactions with their children. Mindful parenting training helps to bring automatic, mindless behavior into awareness in order to reduce maladaptive parent-child interactions (Dumas, 2005). Mindfulness-based interventions have been shown to target interpersonal processes by improving empathic responding, relationship satisfaction, and emotion communication (Block-Lerner, Adair, Plumb, Rhatigan, & Orsillo, 2007; Wachs &

Cordova, 2007). Mindful parenting programs have also evidenced reductions in child abuse potential, rigid parenting attitudes, and child behavior problems (Dawe & Harnett, 2007); improvements in the quality of parent-child relationships (Coatsworth, Duncan, Greenberg, & Nix, 2010); increases in parenting satisfaction (Singh et al., 2010; Singh et al., 2007); and mindfulness more generally (Altmaier & Maloney, 2007).

Overall, mindfulness-based interventions have been shown to affect change in a variety of domains relevant to healthy family functioning. However, the integration of mindfulness-based programs to simultaneously target stress, coping, and parenting that may in turn influence later risk of substance misuse and child maltreatment within child welfare has not yet been tested. Because stress is often an antecedent to, or associated with, substance misuse and child maltreatment, targeting stress and the factors that maintain maladaptive coping may be needed to attenuate both child maltreatment and substance misuse. The reciprocal interaction between substance misuse and child maltreatment also supports the need to concurrently address these problems in one intervention, and current evidence suggests that mindfulness may be a promising approach.

Theoretical Perspective

Figure 1 illustrates a conceptual model that was adapted from Garland and colleagues' (2011) and Garland's (2016) "Integrated Biopsychosocial Model of Automaticity, Allostasis, and Addiction" to facilitate the understanding of the potential pathways between stress and maladaptive behavior, namely substance use and child maltreatment.

functioning, and how mindfulness might target the mechanisms implicated in stress-related problems.

Stress and coping. Stressful life events that lead to significant consequences for well-being and parenting may be first explained by the ways through which parents perceive these events. Individuals often appraise circumstances as positive, negative, or neutral, regularly allocating some emotional significance to varying situations (Weinstein et al., 2009). Because appraised events can be biased by past experiences, they may occur without conscious awareness and thus be habitually motivated (Bargh & Chartrand, 1999; Brown et al., 2007). Individuals generally positively appraise an event when they believe they have the capacity and resources to alleviate the stressor, thereby employing more adaptive coping skills and maintaining well-being (Folkman, 2008). In contrast, when individuals negatively appraise challenging situations as threatening, the situation may subsequently be perceived as exceeding their ability to cope. (Cohen, Kamarck, & Mermelstein, 1983; Lazarus, 1977).

An individual's coping style influences the psychophysiological or behavioral outcomes that succeed stressful situations (Gross & Thompson, 2007; Larsen, 2000). Coping encompasses a range of strategies that individuals use to help change stressful environments or reduce psychological distress associated with adverse circumstances (Lazarus & Folkman, 1984). Coping is often expressed as being either problem-focused (e.g., behavioral engagement) or emotion-focused (e.g., tension reduction; Boals, vanDellen, & Banks, 2011; Lazarus & Folkman, 1984). Additional distinctions have been made to classify coping into approach and avoidant styles (Boals et al., 2011; Chao,

2011; Roth & Cohen, 1986; Wilkinson, Walford, & Espnes, 2000). Approach coping involves responses that aim to confront stressful stimuli (Weinstein et al., 2009). Three distinct forms of approach coping have been identified in the literature: active coping (i.e., action to change the stressor itself), acceptance (i.e., cognitive and emotional acknowledgement of the stressor), and cognitive reappraisal (i.e., change the way we think of, and find the good in, the stressor; Lazarus & Folkman, 1984). Approach coping has been associated with positive affective and adaptive responses that support overcoming adverse circumstances, which in turn facilitates enhanced well-being (Lazarus & Folkman, 1984; Shontz, 1975).

In contrast, avoidant coping includes more maladaptive regulatory strategies such as withdrawing or distancing oneself from the stressor, thereby leading to ineffective efforts to reduce distress and psychological well-being in the long-term (Curry & Russ, 1985; Davies & Clark, 1998). Avoidant coping is often conceptualized in terms of behavioral disengagement (e.g., substance use) or mental/emotional disengagement (e.g., denial or catastrophizing; Stowell, Kiecolt-Glaser, & Glaser, 2001). Thus, when a situation is perceived as threatening and insufficient resources are available to meet the demands of the threat, this will often elicit emotionally negative and maladaptive coping strategies that are associated with an activation of physiological systems involved in the stress response (Lazarus & Folkman, 1984).

This stress-evoked activation of the autonomic nervous system is often evidenced by increases in heart rate, blood pressure, and sweat gland activity (Olf, Langeland, & Gersons, 2005). The overactivity of the autonomic nervous system may result in an allostatic state, a disruption of the body's homeostasis that leads to heightened sensitivity

to threat and vulnerability to future stressors (McEwen, 1998, 2004). This allostatic state may alter the reward systems in the brain, subsequently changing the reward threshold and response to negative emotional stimuli (Koob & Le Moal, 2001). In the context of maladaptive behavior, the shift in the natural reward circuitry may elicit increased substance use to maintain a sense of balance. Reward sensitivity may also impact parenting, with parents high in reward sensitivity more likely to provide more nurturance and warmth to their children (Belsky, 1995; Desjardins, Zelenski, & Coplan, 2008). Consequently, reward sensitivity (e.g., the ability to derive pleasure from natural stimuli) can cause difficulties when parents are under distress or dissatisfied in the parental role, as parental attention may turn to alternative forms of reinforcement (e.g., substance use; Matusiewicz, Macatee, Guller, & Lejuez, 2013). Just as stress can shift natural reward circuitry and heighten the misuse of substances (Sinha, 2001), stress, in conjunction with substance misuse, may further change reward sensitivity and exacerbate the likelihood of hostile parent-child interactions and child maltreatment (Kelley, 1998; Matusiewicz et al., 2013).

These biopsychosocial consequences associated with prolonged exposure to stress influences how we respond in future stressful situations. Dumas (2005) suggests that an individual's history of unpleasant experiences may result in automatized ways of thinking and behaving. Indeed, stress can bias responses toward habitual behaviors, and maladaptive coping may ensue in order to provide initial relief from stressful stimuli (Cooper, Frone, Russell, & Mudar, 1995). For example, misusing substances as a palliative response to stress may negatively reinforce further substance misusing behavior. The use of substances or other behavioral disengagement techniques serve to

both relieve psychological (e.g., unwanted thoughts), physiological (e.g., increased heart rate), and emotional distress (e.g., negative affect) and increase positive cognitive-affective processes (Shiffman, 1982). In turn, although these behaviors are maladaptive, they may be continually reinforced because they reduce immediate distress (Sinha, 2001). Consequently, under conditions of stress, certain stimuli may also trigger maladaptive behavior without use of conscious decision-making processes (Garland, Boettiger, & Howard, 2011), further maintaining this negative reinforcement cycle. For example, the brain structures that underscore cognitive control functions (e.g., inhibitory control, planning, and regulation) may be adversely impacted by stress-related triggers (Deater-Deckard, Sewell, Petrill, & Thompson, 2010) such that a parent may find him or herself using substances or exerting aggressive parenting practices without intent, especially when past successful parenting behaviors may no longer be effective.

Parent-child interactions. When parental stress is high, the risk for a variety of interpersonal parent-child conflicts and child maltreatment increases (Black, Heyman, & Smith Slep, 2001; Hillson & Kuiper, 1994; Rodriguez, 2010). As previously noted, under conditions of high stress, parents' executive functioning skills may be unfavorably impacted such that they may engage in automatic, inflexible information processing (Milner, 1993, 2000). This less controlled processing may thus increase the influence of belief structures, often negative, on parenting behavior (Milner, 1993). For example, if stress is exacerbated as a result of child misbehavior, parents may inaccurately interpret their child's behavior as being intentional, contributing to parental negative affect and poor parent-child interactions (Dix & Grusec, 1985; Mackinnon et al., 1990). Stress and harmful beliefs regarding parenting, in addition to the use of other maladaptive coping

behavior (e.g., substance use), may interact in such a way that increases child maltreatment potential (Crouch & Behl, 2001). Moreover, children become aware that if they continue to seek parental attention through misbehavior, they can sometimes shape parental behavior for their own benefit (e.g., parent surrendering control to the child; Patterson, 1982). However, when such attributions are incorrect, it may trigger parental retaliation because the child's behavior is unjustified, and thus, may perpetuate a cycle of misattributions and misinterpretations evoking punitive, inconsistent, or withdrawn parental reactions (Dodge, 1980; Shipman & Zeman, 2001). When parents habitually display high levels of hostility toward children in stressful situations, children are less likely to learn their own effective self-regulatory skills, which may in turn further aggravate existing child behavior problems (Margalit & Kleitman, 2006). Similarly, parental withdrawal and distancing responses have been associated with elevations in child anger in observed parent-child interactions (Snyder, Stoolmiller, Wilson, & Yamamoto, 2003).

Taken together, the cumulative demands of stressful situations and use of ineffective coping styles, in conjunction with associated physiological and cognitive processes, sustain parental automatized maladaptive behavior. Often this behavior is elicited as a means to temporarily relieve stress (e.g., an alcoholic beverage makes caregiver feel better, hitting a child stops child misbehavior in the immediate term), which in turn reinforces the habit of engaging in such behavior to cope with future stressful situations. When this feedback loop continues to operate in a perpetual cycle, family dysfunction ensues and becomes increasingly heightened by sensitivity to stress.

Role of mindfulness. Interventions that leverage the therapeutic mechanisms to address the biopsychosocial processes implicated in stress-related maladaptive behavior may disrupt cycles causing family dysfunction. Mindfulness training holds notable promise as a means of targeting the risk factors behind parenting stress and substance misuse behaviors that may increase the likelihood of child maltreatment and impaired familial well-being. Specifically, mindfulness fosters the development of nonjudgmental attitudes toward difficult events and involves cognitive control of attention, which has been shown to reduce associated distress (Kabat-Zinn, 1982). Given that the attentional orienting of mindfulness involves the use of brain systems that are responsible for the processes of alerting and executive control (Malinowski, 2013), mindfulness may thus increase the precision of nonthreatening stress appraisals without distorting or overreacting to stimuli (Arch & Craske, 2006). Kabat-Zinn (2003) postulates that mindfulness may also allow for increased flexibility and accuracy in perception of what happens in present moment experiences.

Some authors propose that mindfulness may support approach coping strategies (Weinstein et al., 2009). Evidence suggests that when individuals apply mindfulness to facilitate the objective observation of events, thoughts, emotions, and sensations as they occur, rather than engage in past- or future-oriented negative thinking patterns (e.g., ruminating or catastrophizing), then they are more likely to cope in adaptive ways (McCullough, Orsulak, Brandon, & Akers, 2007). In a systematic review, Chiesa and Serretti (2004) found that present moment orienting may assist in the understanding of stress-related triggers leading to maladaptive behavior such as substance use, rather than withdrawal or distancing oneself from unpleasant feelings associated with substance use

craving and misuse. Evidence has begun to demonstrate that mindful individuals who more readily attend to internal and external states employ greater self-regulation and promote psychophysiological recovery from stressors, reducing the risk of stress-induced relapse (Chiesa & Serretti, 2014).

Mindfulness can also bring awareness to parent-child relationships. Given that stress and substance misuse have been linked with automatized, harsh and controlling parenting practices (Cash & Wilke, 2003; Rodgers, 1993; Webster-Stratton, 1990), acting without conscious intent and engaging in self-focused behaviors are believed to lead to less than optimal quality parent-child relationships (Duncan et al., 2009b). For example, a parent may automatically react to his or her child to control child behavior without considering the needs of the child, but this assertion of power contradicts the promotion of a warm and trusting relationship (Duncan et al., 2009b). In contrast, when parents' attention and awareness are also child and relationship oriented (Dix & Branca, 2003), and they see their children in the present moment, carefully taking their children's wants and feelings into perspective, then they are more likely to develop higher quality relationships with their children and avoid cycles of maladaptive parenting behavior (Duncan et al., 2009b). Moreover, mindfulness training may foster the development of self-regulation of dealing with parenting stress and compassion toward parent-child interactions (Kabat-Zinn & Kabat-Zinn, 1997). Parents who remain aware and cultivate non-judgment and self-regulatory skills, while attending to their child's needs, can create a safer and more stable family environment, thereby promoting a greater potential for healthy family functioning.

The Current Study

The primary aims of this study were to test the feasibility, acceptability, and initial efficacy of a mindfulness training program in a sample of child welfare-involved parents with substance misuse. The overarching goal of the study was to bridge the gaps in the extant knowledge base regarding the development and testing of effective interventions for child welfare-involved families with substance misuse. This research will thus build a foundation for a line of research aimed at employing multifaceted programs focused on improving multiple domains of family functioning through the cultivation of mindfulness-based practices. The following research questions were addressed:

- 1) Can MORE-CW be feasibly and acceptably integrated into child protection agencies as evidenced by the proportion of families recruited, randomized, and retained, and participant satisfaction with the intervention?
- 2) Compared to control-group families, will families who receive MORE-CW show greater improvements in mindfulness skills, parenting stress and autonomic activity during a stress-induced state and recovery (e.g., heart rate variability), and coping (proximal outcomes), and show enhanced family functioning (distal outcomes) as evidenced by reduced risk for parental substance misuse and maltreatment potential, improved child well-being (i.e., emotional and behavioral health), and improved parent-child relationships?
- 3) How do child welfare-involved parents with substance misuse experience stress and use mindfulness components to cope with stress?

CHAPTER THREE: METHOD

Research Design

To address the study's research questions, an embedded mixed-methods research design (Creswell & Plano-Clark, 2011) was used (see Figure 2). For Research Question 1, intervention feasibility and acceptability were evaluated based on recruitment and retention rates and qualitative feedback in which intervention participants completed a program satisfaction survey that consisted of open- and closed-ended questions regarding their experiences while engaging in MORE-CW. For Research Question 2, it was hypothesized that the intervention would produce improvements in proximal outcomes including participant stress, coping, and mindfulness, and mindfulness more generally would help to alleviate some stressors. Specifically, the quantitative element of the study included a pilot randomized controlled trial (RCT) in which participants were randomized to a wait-list control group who received child welfare treatment services as usual (TAU) or to an experimental group that received MORE-CW plus TAU. Participants randomized to the experimental group received TAU, which included case management and monitoring and possible referral to outpatient mental and behavioral health services, plus six weekly in-home MORE-CW sessions, delivered by the principal investigator trained in mindfulness. This design allowed for the opportunity to control for various threats to validity, including selection bias due to differential motivation to

receive MORE-CW. Research Question 3 explored participant experiences of stress and use of mindfulness-based coping and parenting techniques. This qualitative portion of the study included weekly, brief interviews with intervention participants about their stress experiences and use of mindfulness-based coping and parenting techniques.

Figure 2. Embedded Mixed-Methods Research Design

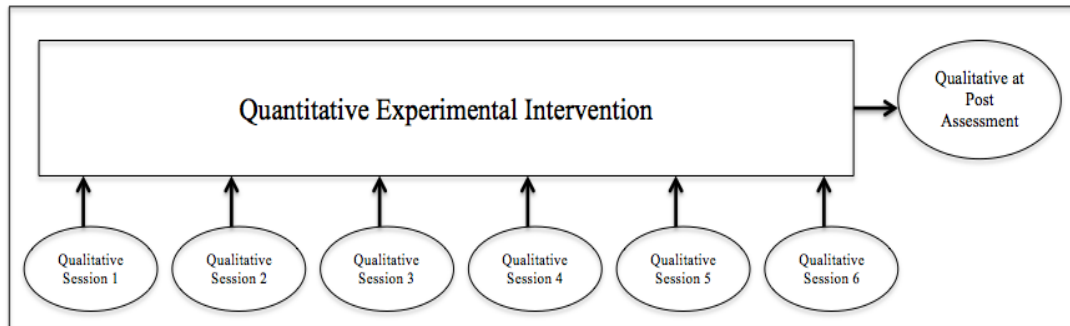


Figure 2. Illustration of the quantitative and qualitative elements involved in this embedded mixed methods design.

Components of the MORE-CW Intervention

The intervention tested in the present study was derived from Mindfulness-Oriented Recovery Enhancement program (Garland, 2013), which is a strengths-based, skill-building intervention that utilizes mindfulness training, cognitive restructuring, and positive psychological principles to target automatic cognitive and emotional processes associated with addiction and stress (Garland, 2013). The original MORE program is a 10 week, manual-based program that is delivered for two-hours in a group format. The program focuses on teaching persons three core therapeutic mechanisms – mindfulness (i.e., moment-to-moment, nonjudgmental awareness), reappraisal (i.e., to look at something in such a way that you feel less negative emotion), and savoring (i.e., selectively focusing attention on positive stimuli) – to enhance their quality of life and

promote recovery as they strive to overcome addiction. MORE has been found effective with substance dependent adults and individuals with chronic pain (e.g., Garland et al., 2010; Garland & Howard, 2013), but MORE has not been tested with child welfare-involved parents with substance misuse.

In order to develop a mindfulness-based intervention that would best meet the needs of child welfare-involved parents with substance use concerns, the principal investigator integrated some components of the original MORE curriculum with several established frameworks that underlie parent-child relationships and family functioning to develop MORE-CW. Parent-child functioning components included the stress and coping theory of child maltreatment (Hillson & Kuiper, 1994), affective-cognitive model of parent-child aggression (Mackinnon et al., 1990), coercion model (Patterson, 1982), and mindful parenting (Duncan et al., 2009b; Kabat-Zinn & Kabat-Zinn, 1997). Specifically, MORE-CW integrates the three core therapeutic mechanisms of MORE (i.e., mindfulness, reappraisal, and savoring) to target stress and addictive processes, and expands this model to include other maladaptive behaviors, such as dysfunctional parent-child interactions.

Primary Goals and Strategies of MORE-CW

Since it is known that stress-precipitated maladaptive behavior is often associated with automatic affective and cognitive processes, the goal of MORE-CW is to disrupt these cycles of automaticity by enhancing awareness of, and attention to, internal and external cues, promoting accurate appraisals and interpretations through cognitive reappraisal and savoring, fostering compassion and nonjudgmental acceptance of self and

child, and facilitating regulation of self and in the parenting relationship through mindful breathing. As illustrated in Figure 3, by teaching parents adaptive mindfulness-based skills, it is hypothesized to have the potential to affect change in long-term family functioning.

Figure 3. MORE-CW Mechanisms Affecting Change in Long-Term Family Functioning

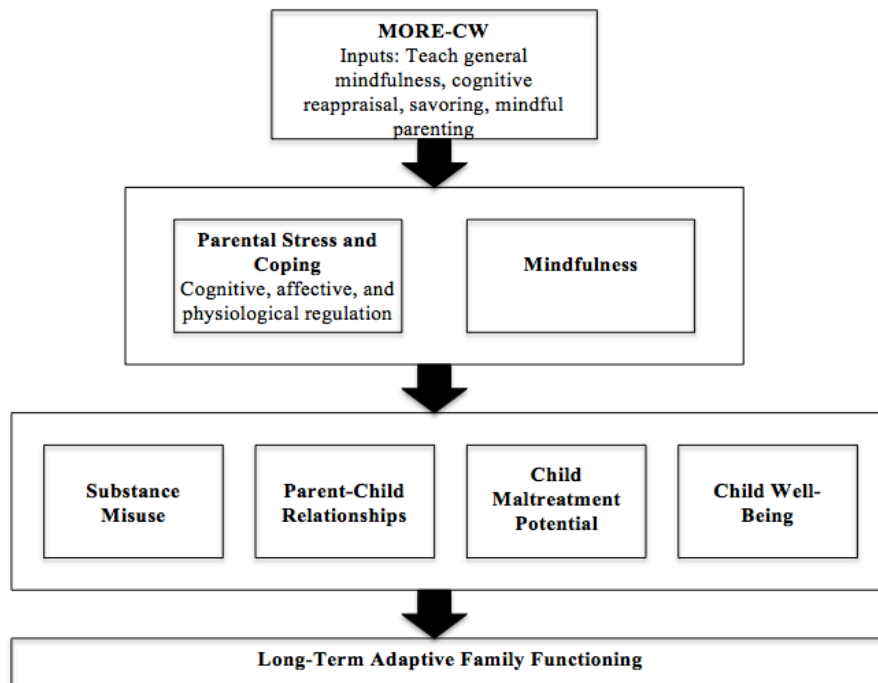


Figure 3. Conceptual model of the factors being tested through the implementation of MORE-CW.

Awareness of present moment experiences and mindful breathing.

Mindfulness is characterized by an accepting awareness of moment-to-moment experiences. Being mindful allows for a clearer understanding of what is going on within us and around us in the present moment. As such, parents in the MORE-CW condition were encouraged to set aside thoughts of, and feelings toward, past and future

experiences during each session by focusing on an object of meditation, which primarily included the sensation of breathing. Parents were encouraged to decenter from their experiences and “step back,” allowing them to accept automatic cognitions, emotions, and sensations by noting them, without evaluation or judgment, and subsequently shift their attention to focus on the present moment. The breath was used as a foundation of present moment experiences and had the added benefits of physiologically calming the body (e.g., decrease heart rate) in times when automatic thoughts, feelings, and sensations became too stressful. Furthermore, parents were taught that they could bring this awareness to their parenting in order to parent consciously and intentionally, rather than automatically. In turn, they were taught that they could bring awareness to how their children are feeling while also identifying their own feelings in the parenting role. For example, this was taught by having parents pay attention to their children’s body language or by noticing the tone of their own voice when speaking with their children under stressful circumstances.

Attending to triggers including thoughts, feelings, and body sensations.

Because automatic processes often drive maladaptive behavior and therefore are out of an individual’s conscious control, helping parents understand that mindfulness is a critical tool in developing awareness of automaticity and influencing one’s own mental processes was a fundamental goal of the program. Parents were taught that, by recognizing the thoughts, feelings, and sensations of triggering behaviors, including substance use and inattentive or hostile parenting, they can exert conscious control over these impulses and differentiate that the impulse and the subsequent action are not the same. In doing so,

parents engaged in experiential exercises where they were given an item (e.g., piece of candy) that facilitated an automatic response in their body. They were guided through these natural reactions to help better understand that, through mindfulness, they could become aware that they have an impulse (e.g., to eat the piece of candy), but they do not have to give in and satisfy their desire. Parents were taught that, if attending to triggers escalated their emotions, they could instead return their focus to the breath in an effort to make appropriate choices and initiate a calming response.

Accurately reappraising situations and savoring pleasant moment experiences. Mindfulness practice was integrated with techniques that facilitated improved cognitive control over unpleasant thoughts and feelings. Parents were encouraged to become aware of thoughts, feelings, and sensations without judging them and to challenge these automatic processes by identifying alternative explanations through positive reappraisal. According to Lazarus & Folkman (1984), positive reappraisal means to interpret stressful situations as meaningful or beneficial such that an individual might conclude that the event made them stronger or that they learned something from the situation. With continued mindful practice, parents were instructed to positively reappraise the stressors in their lives as meaningful or opportunities for growth and to notice that their thoughts do not necessarily reflect reality. Because positive emotional informational processing has been shown to increase positive affect (Roberts-Wolfe, Sacchet, Hastings, Roth, & Britton, 2012), positive psychological principles were also included in session content. Parents were instructed to mindfully focus on and savor pleasurable objects and experiences. When they experienced stressful events, they were asked to find positive meaning in these situations and to focus on positive interactions

with their children. This in turn helped parents recognize that even in the middle of heightened stress, there are plenty of positive occurrences. Because many parents experience stress resulting in increased negative affect, savoring exercises aimed to allow parents the opportunity to selectively focus their attention to positive stimuli as an effective form of improving positive emotion regulation. The intervention taught parents that mindfulness can not only help calm them down during stressful situations or help them to cope with impulses, but that it can also be used to change their thought processes and find pleasure in simple things, serving as a method to enhance their overall well-being.

Mindful parenting. The aforementioned techniques were also specifically applied within the context parenting. Mindfulness has shown to improve awareness of one's automatic reactions to relationship triggers and help one to respond intentionally, rather than automatically in interpersonal situations. A primary goal of the program was to help parents identify their relationship patterns with those around them, including their children, cultivate emotional awareness and self-regulation in parenting, and bring compassion to the parent-child relationship. The concept of mindful parenting was integrated throughout each session. Parents were asked to identify any stressors associated with parenting and then informed of the application of mindfulness to parenting. For example, they were taught that they could pay attention to their thoughts, emotions, feelings, and sensations associated with their present moment parenting experiences and respond to their child in a conscious effort by attending to their child's needs, while exercising self-regulation of their own behaviors. In addition, parents were asked to become aware of their body when they felt parenting stress and apply mindful

breathing to calm down, allowing them to fundamentally shift their awareness and halt automatic reactions. Next, they were asked to “tune in” to and accept their child’s needs using several mindful parenting approaches, such as paying attention to their child’s body language, listening with full attention, and putting themselves in their child’s shoes. These methods, in turn, aimed to help parents facilitate prosocial coping behaviors within the context of the long-term relationship they have with their child. When parents automatically respond to stress or perceive their child’s behavior as negative, they may be more likely to overlook the positive aspects of the parent-child relationship. As such, parents also were instructed to engage in loving-kindness meditation to reduce emotional reactivity and increase an attitude of love and kindness toward their self and others.

Table 1

Comparison between Adapted MORE-CW and Original MORE Session Content

Session Number	MORE-CW Session Title	MORE-CW Session Activities	MORE Session Title	MORE Session Activities
1	Introduction to Mindfulness, Automatic Habits, and Maladaptive Behaviors	Program overview; Assessment of presenting problems, family strength and weaknesses; Orientation to mindfulness, mindful parenting, triggers, and automatic behaviors; Awareness of body’s reactions; Mindful breathing practice	Mindfulness and the Automatic Habit of Addiction	Discussion of the purpose of the program; Explanation of automaticity in addiction; Mindfulness of urges; Explanation of mindfulness; Mindful breathing practice
2	Mindful Reappraisal	Discussion of cognitive reappraisal and reinterpretation	Mindful Reappraisal	Discussion of the power of positive reappraisal;

		of thoughts to be more positive; Stages of change; Mindful breathing practice		Mindfulness reappraisal example; Discussion of relapse and stages of change; Mindful breathing practice
3	Savoring Positive Experiences and Interactions with Children	Discussion of mindful savoring, perceptions and sensations, and relation to parenting; Mindful savoring practice as a means of coping with negative emotions and cognitions	Shifting the Mind to Refocus on Savoring	Focusing on exceptions to craving; Discussion of mindful savoring; Mindful savoring practice; Mindful breathing practice
4	Understanding Maladaptive Impulses and Relationship to Stress	Discussion of maladaptive impulses; Examination of the negative consequences of maladaptive coping; Discussion of the relationship between substance use and parenting; Identification of ways that stress impacts coping habits; Awareness of body's reactions	Seeing through the Nature of Craving	Discussion of the nature of and antidotes to craving; Discussion of how mindfulness can break down craving and contemplation of reasons for staying substance free; Mindfulness of urges; Mindful breathing practice
5	Mindful Parenting	Discussion of parenting triggers for substance use and other maladaptive behaviors; Discussion of interpretative biases	Overcoming Craving by Coping with Stress	Discussion of the difference between reacting versus responding to stress; Imaginal stress exposure exercise and relaxation

			toward children's behavior; Application of mindfulness to parenting; Loving-kindness meditation		response; Body scan practice; Mindful breathing practice
6	Mindful Planning in the Context of Parenting		Review and closure; Discussion of how to maintain mindfulness practice and apply mindfulness to parenting; Development of safety plan to abstain from maladaptive habits; Future visualization exercise	Walking the Middle Way between Attachment and Aversion	Discussion of the concepts of attachment, aversion, and thought suppression; Thought suppression exercise; Acceptance of alcohol thoughts and cravings; Mindful breathing practice
7	--	--		Mindfulness of the Impermanent Body	Discussion of the nature of impermanence; Impermanent body exercise; Mindful walking; Mindful breathing practice
8	--	--		Defusing Relationship Triggers for Relapse	Discussion of relational triggers for substance use and mindfulness of relationships; Loving-kindness meditation; Mindful breathing practice
9	--	--		Interdependence and Meaning in Recovery	Discussion of interdependence and dependence; Meditation on

				interdependence; Discussion of the meaning and purpose in life; Mindful breathing practice
10	--	--	Looking Mindfully toward the Future	Discussion of how to maintain recovery; Developing a recovery plan; Future visualization exercise; Brainstorming how to maintain mindful practice; Mindful breathing practice

A typical session began with an interview about the participant’s week, followed by administration of stress and coping questionnaires, review of psychoeducational content, and implementation of mindfulness exercise and/or breathing. Sessions ended with the administration of mindfulness and reaction to session questionnaires and a concise debrief and discussion of the following week’s activities and content. As can be seen in Table 1, the first MORE-CW session began with an overview of the goals of the program, establishing rapport and parameters around confidentiality, and providing an orientation to mindfulness and automatic behaviors. Following this introduction, the core techniques of mindful breathing, reappraisal, savoring, and parenting are provided through the use of debriefing, psychoeducation, and experiential exercises. At the conclusion of each session, participants were also asked to practice weekly mindful breathing and incorporate specific skills learned into their daily coping habits.

Adaptations in MORE-CW

Several significant adaptations of the original MORE curriculum were made to tailor the intervention to the child welfare context and population. First, the number of sessions was modified. As a result of the difficulty to engage child welfare-involved families with substance misuse (Gopalan et al., 2011) and the competing demands they often face with regard to the frequency and duration of mandated services, the number of sessions of MORE-CW were reduced to six sessions from the original 10 sessions of MORE. Six sessions were agreed upon in consultation with child welfare administrators and coincided with agency goals of providing service options to families that may help to facilitate engagement with treatment. Sessions aimed to accommodate familial needs and provide them with a fundamental set of skills to decrease stress and enhance parenting.

Second, the length, format, and setting of each session were changed. Compared to the two-hour group delivered MORE sessions, MORE-CW sessions lasted approximately one-hour and were provided individually to parents in their homes. These changes aimed to align with previous research documenting that families are more likely to benefit from individualized program delivery that promotes positive service experiences (Lundahl et al., 2006).

Third, the content and structure of each session was modified. Sessions 1-3 of MORE-CW were initially intended to be delivered similarly to the structure of MORE with regard to the length and layout of each session; however, multiple adaptations had to be made in order to meet familial needs. For example, the original MORE program begins with mindful breathing practice lasting from 10-40 minutes. The amount of time designated to mindful breathing and the ability for parents to practice without household

distractions or needing to attend to their children was unfeasible for families. As such, this practice was removed from MORE-CW sessions and, instead, integrated with the mindful experiential exercises at the end of each session in which parents had the opportunity to practice 5-minutes of mindful breathing. Also, as part of the qualitative data collection element of this study, brief interviews were added to the beginning of each session in order to allow parents to share their stress experiences and their use of mindfulness-based techniques implicated in stress, substance use, and parenting. These interviews may have served as an additional therapeutic mechanism to the psychoeducational content delivered in each session as well as contributed to increased parental engagement (e.g., McKay & Bannon, 2004), potentially further transforming MORE-CW intervention from the original MORE. In addition, while MORE-CW's content on the core components (i.e., mindfulness, cognitive reappraisal, and savoring) and guided meditation exercises were similar to the MORE program, some of the activities and language were changed in all sessions to emphasize the role that stress and substance use have in parent-child relationships and encourage mindful parenting. Moreover, the content of session five of MORE-CW was completely revised to include a specific focus on mindful parenting and parent-child relationships. Because there were sometimes distractions (e.g., children and friends in the home), the sessions were also more flexible in nature compared to the original MORE manual.

These adaptations from the original MORE intervention were ultimately made to address the clinical needs of families and enhance their engagement. Modifications were necessary to be consistent with constraints of the child welfare system, reduce participant burden, tailor session content to meet the unique needs of the family, and address many

typical treatment barriers commonly found among child welfare-involved and substance-misusing populations (e.g., transportation, time, child care). In sum, the six MORE-CW sessions aimed to increase cognitive control over dysfunctional emotional, cognitive, and behavioral interactions and regulate reactions to stress that, when unaddressed, may increase maladaptive behaviors including substance misuse and child maltreatment.

Sampling

Using purposive sampling (Berg & Lune, 2012), child protection caseworkers and health department nurses referred families for participation in the study if the family was involved in, or at risk for involvement in, child welfare, and substance misuse was associated with the family's case. Participants were eligible to participate in the study if (1) the family had a recent report to or open case with child protective services, (2) the child protection case was low-to-moderate risk and involved parental substance use as a presenting problem as determined by agency staff, (3) children remained in the home with parents or parents had weekly visitation with their child(ren), (4) the parent was English speaking, and (5) the parent freely agreed, through written consent, to be contacted by the researcher for participation.

In order to determine if substance use was a presenting problem in the current study, child welfare caseworkers or nurse staff assessed safety concerns that included a variety of risk factors, one of which was parental substance misuse. Parental substance misuse was defined as the use of substances that impacts a parents' ability to safely and adequately care for their child(ren). Moreover, while children's developmental age range for this study is broad (0-18 years old), this wide range allowed for flexibility in the

intervention and possible developmental adaptations in future iterations of the study. Parents were excluded from the study if the child protection case involved child sexual abuse or if the family was in extreme crisis due to the high-risk nature of these cases. Familial crisis was determined by parental reports on the Brief Family Distress Scale (Weiss & Lunsky, 2012) administered by the principal investigator, with scores of eight or greater indicating extreme crisis. All families were provided a list of additional resources at the time of consent, but if extreme crisis persisted (scores of eight or above), they would be directed back to their child welfare caseworker or nurse to ensure their immediate, basic needs were met. Among the parents referred for the study, none reported extreme crisis and therefore all parents were eligible to participate.

Procedure

Parents were given flyers from their child welfare caseworker or nurse that described the study name, purpose and intended outcomes of the study, principal investigator contact information, and participant remuneration (i.e., \$100 after program completion). Parents were instructed to sign the backside of the flyer, which included an authorization to release parents' names and phone numbers to the principal investigator, if they were interested in participating in the research study. A total of 33 authorization forms were returned to the principal investigator and stored on a password-protected network.

After collecting the signed, consented forms, participants were contacted by phone to confirm the aforementioned eligibility. The pre assessment was then scheduled with eligible participants at their homes or a neutral location of their choice. The pre

assessment included a collection of demographic information from parents and administration of a psychophysiological assessment protocol and instruments that assessed mindfulness, stress, coping, risk of substance misuse and child maltreatment potential, parent-child relationships, and child well-being. After completion of the pre assessment, participants were randomly assigned to either the six-week MORE-CW or wait-list control group on the basis of a previously determined randomized order. Figure 4 summarizes the recruitment and participation rates of the study.

All participants were administered a series of quantitative instruments as part of the pre- and post-assessments. Participants randomized to the MORE-CW intervention were also administered brief weekly questionnaires to assess stress, coping, state mindfulness, and reaction to each session. These weekly measures were used to assess change in proximal outcomes for participants across sessions.

Qualitative data was collected from intervention participants during each MORE-CW session to gain a better understanding of parents' stress and coping experiences and their application of the skills learned in the intervention.

Post assessments occurred at approximately 6-8 weeks after the pre assessment for both the intervention and control groups. The post assessment was identical to the protocol administered during the pre assessment with the exception of additional surveys examining state stress, recent substance use, and program satisfaction (for MORE-CW condition only).

Figure 4. Recruitment and Participation Rates

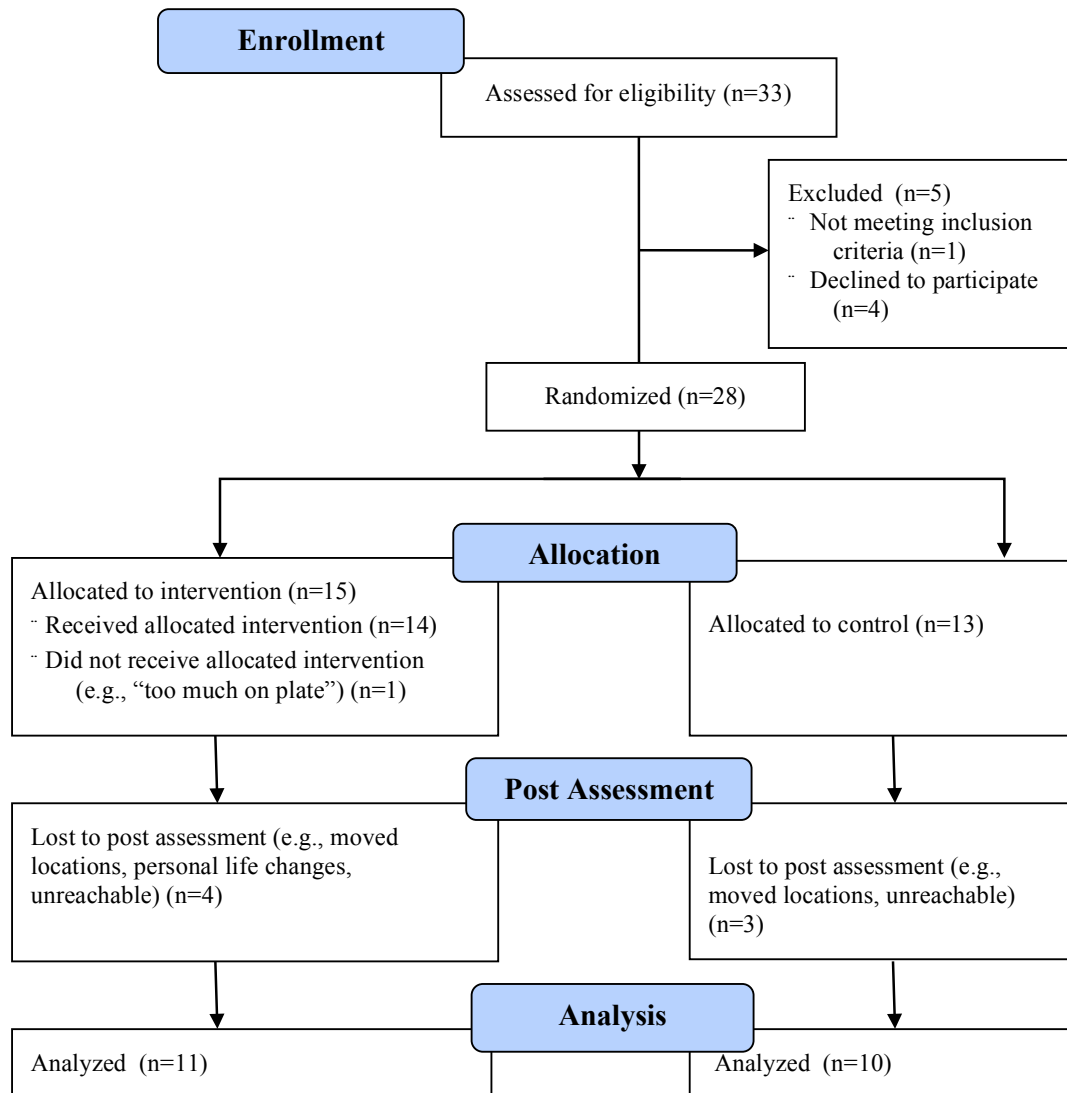


Figure 4. Response rate throughout the recruitment and interviewing processes. Completer status was defined as attendance to at least 5 of 6 of the scheduled mindfulness sessions, and completion of pre- and post-assessments.

The principal investigator and a masters-level graduate research assistant administered pre- and post-assessments to participants assigned to both the intervention and control groups. The principal investigator also administered weekly assessments for

all intervention participants. Training of the research assistant consisted of a four-hour seminar, which involved observing and practicing administration and scoring of each instrument and psychophysiological protocol. In addition, the research assistant completed a supervised assessment in which the assessment protocol was delivered to a participant in the field under the observation and supervision of the principal investigator.

The Institutional Review Board at the University of Denver granted approval of the research project and local department of human services and health department agencies provided the principal investigator permission to recruit participants. Participants' personal information was collected separately from the information provided during the assessments and treatment sessions and stored under locked file. All other study information was de-identified and stored under locked file or on the University of Denver's secure network.

Assessment Measures

Familial crisis was assessed during the eligibility screening using the Brief Family Distress Scale (Weiss & Lunsky, 2012). Parents rated where they and their families were in terms of crisis on a 10-point scale (1 = *everything is fine*; 10 = *we are currently in crisis*). Scores of eight or above indicated families were in extreme crisis.

Parental and child demographics, child welfare involvement status, and treatment history were collected during the pre assessment. The pre- and post-assessments, which took approximately two hours, consisted of several instruments measuring changes in multiple domains of family functioning. Proximal outcomes of family functioning included mindfulness, stress, and coping, whereas distal outcomes included child well-

being, parent-child relationships, and risk of substance use and child maltreatment. In addition, a psychophysiological protocol was administered during the pre- and post-assessments to serve as a non-self-report measure of parental autonomic activity during a stress-induced state and recovery. Table 2 describes the quantitative self-report measures and the assessment schedule. Brief descriptions of the assessment measures, psychophysiological protocol, and qualitative process are also presented below.

Table 2

List of Assessment Instruments and Schedule of Administration

Instrument	Time 1	Time 2	Weekly Sessions
Stress			
Parenting Stress Index-Short Form (PSI/SF)	✓	✓	
Short Stress State Questionnaire (SSSQ)			✓
Perceived Stress Scale (PSS-10)		✓	
Mindfulness			
Five Facet Mindfulness Questionnaire (FFMQ)	✓	✓	
Toronto Mindfulness Scale (TMS)	✓	✓	✓
Interpersonal Mindfulness in Parenting Scale (IEM-P)	✓	✓	
Coping			
Cognitive Emotion Regulation Questionnaire (CERQ/SF)	✓	✓	
Brief COPE	✓	✓	✓
Substance Use			
Mini International Neuropsychiatry Interview (MINI)	✓		
Simple Screening Instrument for Substance Abuse (SSI-SA)	✓	✓	
Recent Substance Use		✓	
Parent-Child Relationships			
Parent-Child Relationship Inventory (PCRI)	✓	✓	
Child Abuse Potential			
Child Abuse Potential Inventory (CAP Inventory)	✓	✓	
Child Well-Being			
Child Behavior Checklist (CBCL)	✓	✓	
Reaction to Session			
Reaction to Session Survey			✓
Program Satisfaction			
Program Satisfaction Survey		✓	

Note. Instruments administered during weekly sessions and program satisfaction survey were only completed by participants assigned to the intervention group.

Quantitative measures.

Stress. Parenting Stress Index-Short Form, 3rd Edition (PSI/SF; Abidin, 1983).

The PSI/SF is comprised of 36 statements (i.e., *Sometimes your child does things that bother you just to be mean; You find yourself giving up more of your life to meet your child's needs than you ever expected*), which parents rate on a 5-point scale (1 = *strongly disagree*; 5 = *strongly agree*). This measure was developed to assess parents' self-reported levels of stress as it relates to their parenting role. It yields a Total Stress score from three subscales that measure Parental Distress, Parent-Child Dysfunctional Interaction, and Difficult Child. The PSI/SF demonstrates good test-retest reliability with correlations between first and second assessments of $r = .75$ for the Total Stress scale (Haskett, Ahern, Ward, & Allaire, 2006). Furthermore, the PSI/SF is found to positively relate to a number of family risk factors, including economic stress (Larson, 2004) and Child Abuse Potential scores (Schaeffer, Alexander, Bethke, & Kretz, 2005). Total Stress scores of the PSI/SF were used in analyses.

Short Stress State Questionnaire (SSSQ; Helton, 2004). The SSSQ is a 24-item (i.e., *I felt dissatisfied; I felt impatient*) self-report measure that identifies three broad domains of stress state (Distress, Worry, and Engagement). Participants rate each statement on the degree to which they agree with how well each item describes how they felt during the past week (1 = *not at all*; 5 = *extremely*). Only the SSSQ Distress domain was used to assess weekly reports of negative affect-emotion (Cronbach's $\alpha = .87$) among intervention participants to track participant trajectories over the six-week intervention.

Perceived Stress Scale (PSS-10; Cohen et al., 1983). The PSS is a 10-item psychological instrument that measures the perception of stress. The questions in the PSS-10 ask participants to rate (0 = *never*; 4 = *very often*) their feelings and thoughts regarding potentially stressful situations that might have occurred during the past month (i.e., *In the last month, how often have you been upset because of something that happened?*). Studies evaluating the internal consistency and test-retest reliability of the measure have found Cronbach's α and Pearson's r to be $>.70$, respectively (Lee, 2012). Total scores of the PSS were used in analyses.

Mindfulness. *Five Facet Mindfulness Questionnaire* (FFMQ; Baer et al., 2006). The FFMQ is a 39-item measure consisting of five subscales (Observing, Describing, Acting with Awareness, Non-Reactivity to Inner Experience, and Non-Judging of Inner Experience) capturing participants' *trait* mindfulness in daily life. Items (i.e., *You find it difficult to stay focused on what's happening in the present; You make judgments about whether your thoughts are good or bad*) are rated on a 5-point Likert-type scale ranging from 1 (*never or very rarely true*) to 5 (*very often or always true*). With regard to construct validity, research has found the FFMQ to be significantly related to meditation experience and well-being (Baer et al., 2008). FFMQ subscales were used in analyses.

Toronto Mindfulness Scale (TMS; Davis, Lau, & Cairns, 2009). The 13 items of the TMS comprise two factors: Curiosity and Decentering. Curiosity refers to the awareness of one's own experiences. Decentering captures how well participants are able to step back and not personally identify with thoughts or feelings in order to prevent getting caught up in one's internal experiences. The measure was designed to assess *state* mindfulness that can vary across a short period of time. Items (i.e., *I was curious about*

what I might learn about myself by just taking notice of what my attention gets drawn to) are rated on a scale from 0 (*not at all*) to 4 (*very much*). Internal consistency reliability include a Cronbach's α of .88 for Curiosity and .84 for Decentering. Subscale scores obtained from the pre- and post-assessments were used in final analyses, in addition to calculating weekly subscale scores of state mindfulness among intervention participants.

Interpersonal Mindfulness in Parenting Scale (IEM-P; Duncan, 2007). Mindful parenting was assessed using the 10-item IEM-P scale. The IEM-P is made up of three subscales (Awareness and Present-Centered Attention, Non-Reactivity, and Non-Judgment), which encompass affective, cognitive, and attitudinal aspects of parent-child relations. Participants are asked to rate statements (i.e., *I find myself listening to my child with one ear because I am busy doing or thinking about something else at the same time*) on a 5-point Likert-type scale (1 = *never true*; 5 = *always true*). Reliability of the total IEM-P scale demonstrates a Cronbach's α of .72. IEM-P subscale scores were used in analyses.

Coping. *Cognitive Emotion Regulation Questionnaire-Short Form* (CERQ/SF; Garnefski, Kraaij, & Spinhoven, 2001). Cognitive coping strategies were assessed using the 18-item CERQ/SF. The measure was designed to explore an individual's thoughts and cognitive strategies after having experienced a negative event. Participants are asked to rate items (i.e., *You think you can learn something from the situation*; *You continually think about how horrible the situation has been*) on a scale from 1 (*almost never*) to 5 (*almost always*). A total score cannot be derived from the measure, but rather includes nine different cognitive coping strategies comprised of two items each. For the purpose of this study, only two coping strategies, Positive Reappraisal and Catastrophizing, were

used in analyses. Cronbach's alpha reliability coefficients are acceptably high, for example .81 for Positive Reappraisal. Correlations between CERQ/SF subscales and symptoms of anxiety have been found to range from $r = -.13$ for Positive Reappraisal to $r = .50$ for Catastrophizing.

Brief COPE (Carver, 1997). Similar to the CERQ/SF, the Brief COPE does not produce a total coping score, but consists of 14 scales of two items each (i.e., *I've been looking for something good in what is happening; I've been giving up trying to deal with it*), which participants rate on a 4-point scale from 1 (*I haven't been doing this at all*) to 4 (*I've been doing this a lot*). This abbreviated version of the COPE was developed to assess effective and ineffective strategies of coping and reduce participant response burden. For the purpose of this study, only three of the 14 scales of coping were used as they better relate to the content taught to participants and the mechanisms targeted in the mindfulness sessions. As such, the three domains of coping and their relative Cronbach's alphas include: Positive Reframing ($\alpha = .64$), Behavioral Disengagement ($\alpha = .65$), and Substance Use ($\alpha = .90$).

Substance use. *Mini International Neuropsychiatry Interview* (MINI; Sheehan et al., 1998). As part of the pre assessment, the MINI was administered to determine whether parents met criteria for substance use disorders. This is a brief, structured interview that facilitates the screening for Axis I disorders as outlined by the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (DSM-IV-TR; American Psychological Association, 2000). Participants were asked about their alcohol and/or other drug use and associated symptoms during the past 12 months. Positive answers were added to determine if participants met criteria for either substance abuse or

dependence. For the purpose of this study, an overall substance use disorder variable was created that captured whether participants met criteria for abuse/dependence of alcohol and/or other drugs (0 = *no*; 1 = *any substance use disorder*). The MINI has demonstrated good reliability and convergent validity with the Structured Clinical Interview for DSM-IV-TR Axis I Disorders (Lecrubier et al., 1997).

Simple Screening Instrument for Substance Abuse (SSI-SA; Winters & Zenilman, 1994). To assess participants' risk for substance misuse, the SSI-SA was administered. The SSI-SA consists of 16 dichotomous (0 = *no*; 1 = *yes*) items that measure alcohol and drug consumption, preoccupation and loss of control, adverse consequences, problem recognition, tolerance, and withdrawal. Two of the 16 items are not included in the scoring. While the majority of questions ask about recent substance use, three questions inquire about lifetime experiences. At the pre assessment, participants were administered all 16 items that inquire about use in the last six months and lifetime experiences and, at the post assessment, participants were only administered 14 items, with two of the lifetime experience questions (i.e., *Have you ever had a drinking or other drug problem?*; *Have any of your family members ever had a drinking or drug problem?*) removed from the survey to reduce redundancy. Additionally, the timeframe on the instrument administered during the post assessment was revised to inquire about substance use in the past six weeks to align with, and assess the risk of, substance use during the experimental intervention phase of the study. As such, the items administered at both the pre- and post-assessments were added to comprise a total risk score of up to 13, with scores falling in the 0-1 range suggesting no to low risk, 2-3 indicating minimal risk, and >4 suggesting

moderate to high risk. The SSI-SA demonstrates strong validity and has been shown to highly correlate with other alcohol and drug use measures (Winters & Zenilman, 1994).

Recent Substance Use. During the post assessment, participants were provided a list of 11 different substances (e.g., alcohol, marijuana, methamphetamines) and were asked to indicate whether or not (0 = *no*; 1 = *yes*) they had engaged in alcohol or other drug use in the past 30 days. Frequency of use for individual substances where there was a 10% or greater difference between intervention and control groups was reported.

Parent-child relationships. *Parent-Child Relationship Inventory* (PCRI; Gerard, 1994). The PCRI assesses parents' attitudes toward parenting and toward their children. It is a 78-item (i.e., *I feel very close to my child; I get as much satisfaction from having children as other parents do*), self-report questionnaire that measures seven content areas (Parental Support, Satisfaction with Parenting, Involvement, Communication, Limit Setting, Autonomy, and Role Orientation), rather than providing an individual's overall ability in and satisfaction with parenting. For the purpose of this study, the PCRI subscale of Satisfaction with Parenting was used. Participants respond using a 4-point scale ranging from 1 (*strongly agree*) to 4 (*strongly disagree*). High scores on the PCRI subscale indicate good parenting skills and low scores indicate poor parenting skills. The PCRI demonstrates good validity and reliability, with all subscales having a Cronbach's alpha of $>.70$.

Child abuse potential. *Child Abuse Potential Inventory* (CAP Inventory; Milner, 1986). The CAP Inventory was designed to serve as a tool that could be used to screen for suspected child abuse. The CAP Inventory consists of 160 total items, 77 of which form the primary clinical scale assessing child physical abuse. The Abuse scale can be

divided into six factor scales describing psychological difficulties and interactional problems (Distress, Rigidity, Unhappiness, Problems with Self and Child, Problems with Family, and Problems from Others). Participants are asked whether they agree or disagree with statements (i.e., *Occasionally, I enjoy not having to take care of my child; Children should never disobey*). The CAP Inventory has been shown to be valid in distinguishing parents who may abuse their children from those who may not (Milner & Wimberely, 1980). The total Abuse scale of the CAP Inventory and the three subscales of Rigidity, Problems with Self and Child, and Problems with Family were used in analyses.

Child well-being. *Child Behavior Checklist* (CBCL; Achenbach & Rescorla, 2000, 2001). Parents reported on the behaviors and functioning of one of their children with whom they had the most difficulties parenting. Two versions of the CBCL were used to assess children's behavioral and emotional problems. One version examined profiles of children aged 1.5-5 years old (i.e., preschool forms), and the other version assessed profiles of children aged 6-18 (i.e., school-aged forms). The preschool version of the CBCL includes 99 items in which parents rate the degree to which the statement best describes their children's emotions and behaviors now or within the past two months (0 = *not true*; 1 = *sometimes true*; 2 = *very true*). For the school-aged form, parents use the same rating scale to answer 112 items that describe their children's problems, but answer based on the preceding six months. Both forms have two composite scales for Internalizing (e.g., withdrawn, somatic complaints, anxiety) and Externalizing (e.g., delinquent and aggressive) behaviors as well as a Total Problem scale, which were used for the current study. These scales are computed by adding the sum of 0-1-2 scores on the specific problems items, with higher scores indicating more problem behaviors. Both the

preschool and school-age versions of the CBCL demonstrate good reliability and validity (Achenbach & Rescorla, 2000, 2001).

Reaction to session. As part of the weekly measures completed by the intervention group, participants were asked four questions to assess their reaction to the session content. Specifically, participants were asked to rate on a 5-point Likert-type scale (1 = *strongly disagree*; 5 = *strongly agree*) if they gained something positive from participating in the session, if the session raised emotional issues they had not expected, if they gained insight about their experiences during the session, and if the session made them think about things they did not want to think about.

Psychophysiological protocol. During the pre- and post-assessments, participants completed an affect-modulated cue-reactivity protocol measuring heart rate (HR) and heart rate variability (HRV) responses to visual and auditory substance-related and interpersonal stress cues. This allowed for an exploratory examination of how mindfulness training may influence physiological mechanisms implicated in stress-precipitated family dysfunction. Before exposure to any stress-related stimuli, a 5-minute baseline of participant heart rate was obtained. In the first task, participants were shown a serial stream of familial stress-related, substance-related, and neutral stimuli (photos were selected from the International Affective Picture System and from open source media libraries on the internet), presented via computer for 6 seconds at a time in 4 blocks of 12 photos (total length of block was 4 minutes). After each of the blocks, participants rated their affective and craving responses, followed by a 30 second intertrial interval to allow heart rate to go back to resting. Block order was randomized and counterbalanced. Blocks were used to extract HRV (which requires ≥ 2 min long recordings; Collier, 2015). After

completion of the visual computer task, a second 5-minute baseline of participant heart rate was obtained. In the next task, participants listened to a 2-minute pre-recorded personal narrative in which they described a stressful family event that recently occurred. Participants were asked to provide a different situation at the pre- and post-treatment assessment that each elicits equivalent self-reported stress. Finally, participants were asked to practice “whatever calming skills you generally use to cope with stress” for a 7-minute recovery period to help reduce distress levels and employ mindfulness, while HR and HRV was measured. Participant HR and HRV were measured using the SweetBeat application (downloadable on an iPhone) that synced to a chest strap heart rate monitor and receiver.

Qualitative interviews and measures.

Qualitative interviews. As part of the intervention sessions, loosely-structured, audio-taped interviews were conducted at the beginning of each session in which participants were asked about their recent stressors, thoughts about substance use, and use of mindfulness coping and parenting techniques (see Appendix A). Interviews lasted approximately 5-15 minutes and allowed participants to express their recent experiences and describe the challenges they may face in their day-to-day lives. These brief interviews also allowed for an opportunity for the provider to build rapport with each participant and connect their experiences to the content to be discussed in the following session.

Program satisfaction. Participants assigned to the intervention group completed a program satisfaction survey during the post assessment protocol to assess parents’ experiences and thoughts after participating in the mindfulness intervention. The survey

consisted of 10 items in which participants rated the way they felt about the services they received on a 5-point scale (1 = *none of the time*; 5 = *all of the time*). Percentages of each of the 10 items were computed for analysis. The survey also consisted of five open-ended questions describing the benefits and challenges of participating in the intervention as well as recommendations for future iterations of the mindfulness sessions (i.e., *What were the benefits of participating in MORE-CW?*; *What were the drawbacks of participating in MORE-CW?*; *What did you notice change in yourself since participating?*; *How could sessions be improved?*; *What else would you like to add that relates to your experience while participating?*).

Data Analysis

Quantitative. Statistical analyses were performed using SPSS version 22.0 (IBM Corp. Released 2012). Descriptive statistics (means, standard deviations, or percentages) were used to describe the sample characteristics, as well as the feasibility and acceptability of providing this intervention in the context of child welfare by describing the proportion of families recruited, randomized, and retained, and by participant satisfaction levels.

Analyses of the differences between groups for demographic and baseline scores used independent samples t-tests and chi-square tests for continuous and categorical variables, respectively.

For all proximal and distal self-report outcomes, the change in scores from pre- to post-assessment (i.e., post assessment score – pre assessment score) was calculated and the differences were analyzed using independent samples t-tests to find differences between the intervention and control groups. For between-group analyses, a Bonferroni

adjustment ($\alpha = .05/26 = .002$) was used to interpret results to address multiple comparisons. However, as this was a pilot study aimed to explore the potential significant effects of the intervention on multiple domains of family functioning, results are reported at both the traditional alpha level of .05 and at the more conservative adjusted alpha level of .002.

Changes in scores on outcome variables within groups were also compared using paired samples t-tests. Comprehensive Meta Analysis (CMA) Version 2 software (Borenstein, Hedges, Higgins, & Rothstein, 2005) was used to calculate Hedges' *g* effect sizes to correct for small sample bias, and converted positively to indicate desired change direction. These analyses included treatment completers (attended ≥ 5 sessions and completed pre- and post-assessments). As a result of collecting data in face-to-face interviews, all variables had fewer than 5% missing data; missing data were handled with list-wise deletion.

Intent to treat (all participants who were randomized to participate in the study) analyses were intended to be conducted. However, due to the inability to reach the participants who dropped out prior to completing the post assessment ($n = 7$), and because the original goal for this pilot study was to determine whether any preliminary effects could be identified to inform future intervention development and testing, participants who dropped out of the study and who had been assigned to the intervention, but who were unable to attend any session of the intervention, were excluded from analyses.

Data of the R-R intervals (i.e., the time between two consecutive heart beats) obtained from the SweetBeat application were uploaded to Kubios 2.0 (Biosignal

Analysis and Medical Imaging Group, University of Finland) to conduct time-domain analysis. The square root of the mean squared differences between successive R-R intervals (RMSSD) was selected to estimate vagally mediated HRV, an indicator of parasympathetic cardiac regulation. HRV indices were averaged across the 5-min baseline and 4-min computerized substance- and familial stress-related cue-exposure periods, respectively, as well as the 2-min auditory stressful narrative and mindful recovery periods. Three-way (group assignment X time X experimental stress cue/recovery) repeated measures analysis of covariance (ANCOVA) were used to compare the intervention and control groups on HRV, with baseline levels of HRV as a covariate.

Visual analyses (Parsonson & Baer, 1978) were used to illustrate the trends (i.e., increase or decrease) across intervention participants ($n = 11$) by calculating the mean scores from the weekly mindfulness, coping, and stress assessments from each session and plotting a mean line. This single-subject design helps to provide deeper insight into how intervention participants change over time on proximal outcomes. Though these analyses cannot be generalized to a larger population, it allows for the opportunity to obtain detailed information on the practical implications of the intervention (Engel & Schutt, 2009).

Qualitative. Audio recordings of qualitative interviews were transcribed, and the principal investigator and a graduate research assistant analyzed these transcripts. The two coders analyzed relevant sections of the transcripts using a template approach (Crabtree & Miller, 1999) in which a priori codes were used that were associated with domains of stress, coping, and mindfulness. These codes were specifically used to

address the guiding research questions for qualitative analysis: (1) What are participants' experiences of stress? and (2) How do participants use mindfulness-based coping and parenting techniques? Template analysis allows for a hierarchical method of coding in which broad themes are used that encompass narrower, more specific themes and/or patterns (Padgett, 2008). Thus, an iterative process was used to identify emerging codes within these a priori categories and group these codes into themes. After a final codebook was developed, percent agreement was calculated between the two coders and transcripts were rated with high rates (90%) of inter-rater reliability.

The themes identified through qualitative data analysis were then used to support aspects of the experimental design (Creswell & Plano-Clark, 2011). Specifically, the qualitative element of the study served to answer a supplemental research question through the exploration of participant experiences of stress and their reactions to and use of mindfulness-based skills. Ultimately, the themes emerging from the qualitative data were used to enhance the application of the experimental design, and inform future adaptations to the intervention.

CHAPTER FOUR: RESULTS

Participant Characteristics

Participants in the current study ($N = 21$) included English-speaking parents with substance use concerns who were involved in the child welfare system. Participants averaged 31 years old (range 21 to 53), were primarily low-income mothers, and were racially and ethnically diverse, with most identifying as White (71.4%), followed by Latino (14.3%), Black (9.5%), and “other” (4.5%). More than half of the participants had a child protective case that was court involved, had a prior report of maltreatment to child protective services, were unemployed, and met criteria for substance use disorder. Only three participants (14.3%) from the full sample reported prior experience with mindfulness.

Parents with multiple children were asked to identify a target child when completing information about their child, and they based this information on the child with whom they had the most difficulties parenting. Parents predominantly identified male children with a mean age of 5.3 ($SD = 5.0$) as the “target child.”

Participants randomized to the intervention and control groups did not significantly differ on sample characteristics or baseline measures of mindfulness, stress, substance use, child maltreatment potential, or child behavior problems. Table 3 shows

the characteristics of participants who completed the study and could therefore be analyzed for change over time. Table 4 compares characteristics of participants who were retained in the study to those who dropped out of the study. A total of seven participants dropped out of the study, of whom four were from the intervention group and three from the control group. As seen in Table 4, the target child's gender and baseline substance use differed, with participants who dropped out more likely, compared to those retained, to identify female children as targets for completion of the child well-being instrument and to report greater substance use.

Table 3

Sample Characteristics for Full Sample and by Intervention and Control Group

Characteristic	Full Sample ^a (N = 21)		MORE-CW (n = 11)		Control (n = 10)		Chi-Square
	n	(%)	n	(%)	n	(%)	
Gender							$\chi^2(1)=1.01$
Male	4	(19.0)	3	(27.3)	1	(10.0)	
Female	17	(81.0)	8	(72.7)	9	(90.0)	
Race/ethnicity							$\chi^2(3)=4.56$
Black	2	(9.5)	1	(9.1)	1	(10.0)	
White	15	(71.4)	9	(81.8)	6	(60.0)	
Latino	3	(14.3)	0	(0.0)	3	(30.0)	
Other	1	(4.8)	1	(9.1)	0	(0.0)	
Legal Status							$\chi^2(1)=.40$
Court Involved	12	(57.1)	7	(63.6)	5	(50.0)	
Voluntary	9	(42.9)	4	(36.4)	5	(50.0)	
Employment Status							$\chi^2(1)=.04$
Employed	10	(47.6)	5	(45.5)	5	(50.0)	
Unemployed	11	(52.4)	6	(54.5)	5	(50.0)	
Income							$\chi^2(4)=6.11$
Less than \$15,000	7	(33.3)	4	(36.4)	3	(30.0)	
\$15,000-\$24,999	8	(38.1)	2	(18.2)	6	(60.0)	
\$25,000-\$34,999	3	(14.3)	3	(27.2)	0	(0.0)	
\$35,000-\$44,999	1	(4.8)	1	(9.1)	0	(0.0)	
\$45,000-\$54,999	2	(9.5)	1	(9.1)	1	(10.0)	

Table 4

Sample Characteristics by Retained Participants and Drop Out Participants

Characteristic	Full Sample ^a (N = 21)		Drop Outs (n = 7)		Chi-Square
	n	(%)	n	(%)	
Gender					$X^2(1)=.08$
Male	4	(19.0)	1	(14.3)	
Female	17	(81.0)	6	(85.7)	
Race/ethnicity					$X^2(3)=5.33$
Black	2	(9.5)	2	(28.6)	
White	15	(71.4)	3	(42.9)	
Latino	3	(14.3)	1	(14.3)	
Other	1	(4.8)	1	(14.3)	
Legal Status					$X^2(1)=.18$
Court Involved	12	(57.1)	4	(66.7)	
Voluntary	9	(42.9)	2	(33.3)	
Employment Status					$X^2(1)=.78$
Employed	10	(47.6)	2	(28.6)	
Unemployed	11	(52.4)	5	(71.4)	
Income					$X^2(4)=2.50$
Less than \$15,000	7	(33.3)	3	(42.9)	
\$15,000-\$24,999	8	(38.1)	3	(42.9)	
\$25,000-\$34,999	3	(14.3)	0	(0.0)	
\$35,000-\$44,999	1	(4.8)	1	(14.3)	
\$45,000-\$54,999	2	(9.5)	0	(0.0)	

Education					$\chi^2(3)=3.64$
Less than high school	5	(23.8)	1	(14.3)	
High school grad/GED	4	(19.0)	2	(28.6)	
Some college/ College Grad	12	(57.1)	4	(57.1)	
Prior Report of Maltreatment	13	(61.9)	4	(57.1)	$\chi^2(1)=.05$
Prior Mindfulness	3	(14.3)	2	(28.6)	$\chi^2(1)=.73$
Current Substance Use Treatment	9	(42.9)	4	(57.1)	$\chi^2(1)=.43$
Prior Mental Health Diagnosis	10	(47.6)	3	(42.9)	$\chi^2(1)=.05$
Met Criteria for SUD	14	(66.7)	5	(71.4)	$\chi^2(1)=.06$
Target Child Gender ^b	15	(71.4)	2	(28.6)	$\chi^2(1)=4.04^*$
Male	6	(28.6)	5	(71.4)	

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	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i> -tests
Parent Age	31.3	9.0	33.7	9.9	$t(26)=-.59$
Days Open Case ^c	176.4	138.5	179.0	188.5	$t(25)=-.04$
Number of Children	2.5	1.4	3.1	1.8	$t(26)=-.97$
Target Child Age	5.3	5.0	8.1	5.9	$t(26)=1.20$
Baseline Mindful Awareness	27.2	5.6	23.4	6.6	$t(26)=-1.49$
Baseline Stress	75.2	17.6	86.0	19.3	$t(26)=1.37$
Baseline Substance Use	2.9	2.9	6.6	4.1	$t(26)=2.57^*$
Baseline Child Abuse Potential	184.5	111.5	255.4	61.8	$t(26)=2.10$
Baseline Total Child Problems	61.1	7.1	63.7	10.3	$t(23)=-.74$

Note. SUD = substance use disorder. Percentage of sample with affirmed history of treatment, substance use, and mental health. ^aFull sample includes intervention treatment completers (attended ≥ 5 sessions and completed pre- and post-assessments) and wait-list control group completers (completed pre- and post-assessments). ^bChildren identified by parental reports on the CBCL. ^cNumber of days child protection case had been open at the time of the pre assessment. ^{*} $p < .05$.

Research Question 1: Intervention Feasibility and Acceptability

Over a nine-month period, child welfare caseworkers and health department nurses referred parents to participate in the program. All parents who were referred to the study were contacted by phone and only 33 were reachable and thus assessed for eligibility. Of those assessed for eligibility, five parents were ineligible, one due to not meeting inclusion criteria and four others due to declining to participate as a result of the need to complete other mandated services and disinterest in the study. Therefore, 28 parents (85%) were randomized to either the intervention ($n = 15$) or control ($n = 13$) groups. One parent randomized to the intervention group dropped out prior to the start of the intervention and three others dropped out early in the program (after the second or third session) due to moving to another state, personal life changes and feeling overwhelmed, or being unreachable at subsequent contacts by the researcher. Thus, 11 of the 15 parents (73%) were retained in the program and completed post assessments. Three parents in the control condition also dropped out of the study due to the inability of the researchers to reach the participants, though multiple attempts and methods (e.g., text message, voicemail) were made to contact them. With respect to intervention attendance, on average, parents completed 5.8 ($SD = .40$) sessions. The primary barrier to attending all six mindfulness sessions included frequent rescheduling due to other demands parents had to meet, such as attending other child welfare-mandated services or visitation with children.

Parents assigned to MORE-CW completed a program satisfaction survey at the post assessment to explore the overall acceptability of the program quantitatively and

qualitatively. Program satisfaction was also assessed by participant ratings of their reactions to individual sessions. Findings from the overall post-program satisfaction survey indicated that the majority of parents felt they benefited from the intervention. Quantitatively, 91% ($n = 10$) of participants indicated that, “all or most of the time,” the program was a big help to them, they got the kind of help through the program they needed, and they learned a lot about how to manage their stress. Moreover, all ($N = 11$) participants reported they enjoyed learning about the concept of mindfulness. To further assess participant satisfaction for individual sessions, participants rated, on a scale from strongly disagree to strongly agree, if: (1) they gained something positive from participating, (2) the session raised emotional issues that they had not expected, (3) they gained insight about their experiences through participating, and, (4) the session made them think about things they did not want to think about. Table 5 displays the frequencies of parent ratings of individual session content.

Table 5

Participant Ratings of their Reactions to MORE-CW Session Content

Reaction to Session Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	%				
Session 1: Introduction to Mindfulness, Automatic Habits and Maladaptive Behaviors					
Gained something positive	0	0	0	34.4	36.6
Raised emotional issues	36.4	18.2	27.3	18.2	0
Gained insight	0	0	0	63.3	36.4
Thought about unwanted things	27.3	36.4	27.3	9.1	0
Session 2: Mindful Reappraisal					
Gained something positive	0	0	0	45.5	54.5
Raised emotional issues	45.5	18.2	27.3	9.1	0
Gained insight	0	0	9.1	54.5	36.4
Thought about unwanted things	45.5	27.3	18.2	0	9.1
Session 3: Savoring Positive Experiences and Interactions with Children					
Gained something positive	0	0	0	45.5	54.5

Raised emotional issues	36.4	27.3	18.2	9.1	9.1
Gained insight	0	0	36.4	45.5	18.2
Thought about unwanted things	36.4	45.5	18.2	0	0
Session 4: Understanding Maladaptive Impulses and Relationship to Stress					
Gained something positive	0	0	0	50.0	50.0
Raised emotional issues	30.0	20.0	20.0	20.0	10.0
Gained insight	0	0	10.0	60.0	30.0
Thought about unwanted things	50.0	0	20.0	20.0	10.0
Session 5: Mindful Parenting					
Gained something positive	0	0	0	27.3	72.7
Raised emotional issues	36.4	18.2	18.2	18.2	9.1
Gained insight	0	0	0	54.5	45.5
Thought about unwanted things	72.7	18.2	0	9.1	0
Session 6: Mindful Planning in the Context of Parenting					
Gained something positive	0	0	0	30.0	70.0
Raised emotional issues	20.0	20.0	40.0	20.0	0
Gained insight	0	0	10.0	50.0	40.0
Thought about unwanted things	60.0	20.0	10.0	10.0	0

Qualitatively, parents were asked about the benefits of participating in the program as well as suggestions for improvement. Several themes were identified from the open-ended questions on the program satisfaction survey. Parents reported that the program helped them to (1) recognize triggers to stressful situations, (2) become calmer and more attentive, and (3) improve communication with their child. For example, when asked about what was helpful through participating in the program, one parent stated, "...I learned how to step back and look at a situation, take a deep breath, and not stress about the future...[I could] focus on the here and now." Another parent said, "...it helped me to be more aware...and brought to my attention behaviors that I was doing that I didn't like." When asked about how the session content had been applied to interactions with their children, one parent stated, "We are communicating better...not as many screaming matches and not at the level that it used to be." One parent also reported, "I have been able to listen and be more attentive to my daughter." In addition, parents

expressed that the “in-home aspect [of the program] was good” and they appreciated the individualized nature of the program.

In regards to areas for improvement, participants reported that the visual cues presented in the psychophysiological protocol were “outdated” and two parents “did not see the connection” in using these to assess stress.

In sum, findings provide further insight into parents’ perceptions of the program and suggest that the program was generally well-received by this sample of child welfare-involved parents with substance misuse.

Research Question 2: Preliminary Treatment Effects

Independent samples t-tests were used to compare parents assigned to the intervention and control groups on improvements (i.e., change in mean scores from pre- to post-assessment) in proximal and distal domains of family functioning. Findings are presented for all total scale and subscale measures completed by participants during the pre- and post-assessments. Paired samples t-tests were used to explore within-group effects from pre- to post-assessment for intervention and control groups. Table 6 displays the effect size estimates for all self-report dependent variables, and the between- and within-group statistically significant findings are indicated. Levene’s test for equality of variances showed no significant group differences, and therefore, equality of variance was assumed. Finally, repeated measures ANCOVAs were used to examine parasympathetically mediated HRV during exposure to stress-induced visual and auditory tasks and mindful recovery.

Proximal outcomes.

Self-reported stress and physiological activity during stress-induced state and recovery. Total scores from the Parenting Stress Index-Short Form and the Perceived Stress Scale were used to examine stress within the parenting role as well as feelings and thoughts regarding general stressful situations. A statistically significant between-group effect was found for total scores on the Parenting Stress Index-Short Form, $t(19) = 2.16$, $p < .05$, Hedges' $g = .90$, with the intervention group decreasing significantly more from pre- to post-assessment ($M = -8.18$, $SD = 9.71$) than the control group ($M = 3.30$, $SD = 14.45$). No significant between- or within-group differences were found for total scores on the Perceived Stress Scale.

Parental autonomic activity during a stress-induced state and recovery was measured by heart rate variability (HRV) indices during an affect-modulated cue reactivity protocol. With regard to the effects of the intervention on HRV responses to visual and auditory cue-exposure and mindful recovery, the group assignment X time X experimental stress cue/recovery (baseline, substance use exposure, family stress exposure, mindfulness) effects were non-significant, indicating that intervention and control groups did not differ over time in their HRV responses to familial stress and drug prompted cues. However, a statistically significant group X time effect on RMSSD from the auditory task to recovery period was found, $F(1) = 11.02$, $p < .01$, $p\eta^2 = .41$, such that MORE-CW significantly increased parasympathetically mediated HRV across the auditory stress cue and mindful recovery from pre- to post-assessment, whereas the control group exhibited reduced HRV, controlling for baseline HRV. Thus, intervention

participants displayed increased parasympathetic regulation while listening to their recorded stressful narratives and during mindful recovery from that stress.

Mindfulness. Three different scales were used to measure parents' trait (i.e., general or dispositional mindfulness), state (i.e., immediate experience of mindfulness), and interpersonal parenting mindfulness. Specifically, trait mindfulness was measured using the Five Facet Mindfulness Questionnaire (FFMQ) subscales for Observing, Describing, Acting with Awareness, Non-Reactivity, and Non-Judgment. State mindfulness was measured with the two subscales (Decentering and Curiosity) of the Toronto Mindfulness Scale (TMS). Finally, interpersonal mindfulness within the context of parenting was measured using the Interpersonal Mindfulness in Parenting Scale (IEM-P), which included three subscales of Awareness, Non-Reactivity, and Non-Judgment. There were no significant findings between- or within-groups on measures of state (TMS Curiosity and Decentering) and interpersonal parenting mindfulness (IEM-P Awareness, Non-Judgment, and Non-Reactivity). However, statistically significant improvements were found between the intervention and control groups on the trait mindfulness FFMQ subscales of Awareness, $t(19) = -3.08, p < .01$, Hedges' $g = 1.29$, and Non-Judgment $t(19) = -2.37, p < .05$, Hedges' $g = .74$, but not for Observing, Describing, or Non-Reactivity. Specifically, the intervention group increased from pre- to post-assessment in Mindful Awareness and Non-Judgment ($M = 2.55, SD = 4.61$; $M = 1.64, SD = 3.47$, respectively), compared to the control group ($M = -4.20, SD = 5.43$; $M = -2.70, SD = 4.85$, respectively). In addition, a significant within-group effect was found for Mindful Awareness for the control group, $t(9) = 2.45, p < .05$, Hedges' $g = .85$, as participants

reported decreases from pre assessment ($M = 28.40$, $SD = 4.03$) to post assessment ($M = 24.20$, $SD = 4.92$).

Coping. Coping was measured using several subscales from the Cognitive Emotion Regulation Questionnaire-Short Form (Positive Reappraisal and Catastrophizing) and the Brief Cope (Positive Reframing, Behavioral Disengagement, and Substance Use). No significant between-group differences were found between the intervention and control groups on all subscale measures of coping. There was, however, a significant within-group effect for the control group on the Brief COPE Substance Use subscale, $t(9) = -2.25$, $p = .05$, Hedges' $g = .43$, with parents in the control group increasing from pre assessment ($M = 2.50$, $SD = .85$) to post assessment ($M = 3.10$, $SD = 1.20$) on their reports of substance use to cope with unpleasant situations.

Distal outcomes.

Substance use. Substance use was assessed by changes in total scores from the Simple Screening Instrument for Substance Abuse (SSI-SA) from pre- to post-assessment, and from the recent substance use questionnaire administered at post assessment in which participants responded whether or not they had used any of the 11 different types of substances listed within the past 30 days. No significant intervention effect was found for substance use using total scores from the SSI-SA. However, results from the recent substance use measure found that the control group engaged in slightly more frequent substance use at post assessment compared to the intervention group. Using a criterion of 10% or greater difference of use between groups, larger proportions of parents in the control group indicated use of alcohol (60%) and prescription pills

(20%) than did parents in the intervention group (alcohol: 18.2% and prescription pills: 9.1%).

Parent-child relationships. The Satisfaction with Parenting subscale of the Parent Child Relationship Inventory was used to examine improvements in parent-child relationships. No significant between-group effect was found among the intervention and control groups. However, a statistically significant within-group effect was found for the control group, $t(9) = 2.54, p < .05$, Hedges' $g = .38$, such that parents reported decreased parenting satisfaction from pre assessment ($M = 29.30, SD = 1.89$) to post assessment ($M = 28.20, SD = 2.62$).

Child abuse potential. Child abuse potential was assessed using the Child Abuse Potential Inventory primary Abuse scale and from the Parental Rigidity, Problems with Self and Child, and Problems with Family subscales. No significant between- or within-group differences were found for the primary Abuse scale. However, there were statistically significant between-group effects on subscale scores. A statistically significant between-group effect was found for Parental Rigidity, $t(19) = 2.35, p < .05$, Hedges' $g = .99$, as parents in the intervention group reported a significant decrease in rigid parenting practices and beliefs from pre- to post-assessment ($M = -5.64, SD = 7.62$), compared to the control group ($M = 3.90, SD = 10.83$). Statistically significant between-group differences were found for Problems with Self and Child, $t(19) = 2.61, p < .05$, Hedges' $g = 1.10$, with parents in the intervention group indicating decreased problems ($M = -1.91, SD = 2.98$) compared to parents in the control group ($M = 2.20, SD = 4.18$). Finally, a statistically significant between-group effect was found for Problems with Family, $t(19) = 2.10, p < .05$, Hedges' $g = .88$. Specifically, the intervention group

reported reductions in problems with family members from pre- to post-assessment ($M = -4.36$, $SD = 9.28$), whereas the control group reported increases in familial concerns ($M = 2.40$, $SD = 4.38$).

Child well-being. Although children were not directly served in the current study, it was hypothesized that there may be improvements in parental perceptions of child behavior problems among children of parents involved in the intervention. Child well-being was examined using the Child Behavior Checklist (CBCL) Total Problems scale and the Internalizing and Externalizing subscales. A statistically significant between-group effect was found between the intervention and control groups on CBCL Total Problems, as parents in the intervention group reported decreases in total problems, $t(16) = 3.83$, $p < .002$, Hedges' $g = 1.72$, from pre- to post-assessment ($M = -7.11$, $SD = 4.78$), compared to the control group which indicated increases in total problems ($M = 1.56$, $SD = 4.82$). Moreover, the Externalizing and Internalizing subscales that comprise the Total Problems scale demonstrated significant intervention effects. A between-group effect was found for Internalizing Problems, $t(16) = 2.56$, $p < .05$, Hedges' $g = 1.15$, such that the intervention group parents reported decreases in child internalizing behaviors ($M = -5.89$, $SD = 8.55$), while the control group reported increases ($M = 2.89$, $SD = 5.71$). An intervention effect was also found for Externalizing Problems, $t(16) = 2.50$, $p < .05$, Hedges' $g = 1.12$, as parents in the intervention group reported decreases in child externalizing behaviors ($M = -6.78$, $SD = 6.53$) and control group parents reported slight increases ($M = .67$, $SD = 6.10$).

Table 6

Means, Standard Deviations, and Effect Sizes for Intervention and Control Groups

Outcome	Mean (SD) Pre Assessment	Mean (SD) Post Assessment	Within Group <i>t</i> (df)	Within Group Effect Size ^a [CI]	Between Group <i>t</i> (df)	Between Group Effect Size [CI]
Stress						
PSI/SF Total Stress						
MORE-CW (<i>n</i> =11)	76.36 (17.90)	68.18 (16.97)	2.79 (10)	.43 [.13, .81]*		
Control (<i>n</i> =10)	74.00 (18.20)	77.30 (15.06)	-.72 (9)	.18 [-.34, .73]	2.16 (19)	.90 [.04, 1.85]*
Perceived Stress Scale						
MORE-CW (<i>n</i> =11)	-	18.45 (5.62)	-	-	.98 (19)	.41 [-.44, 1.30]
Control (<i>n</i> =10)	-	20.90 (5.82)	-	-		
Mindfulness						
FFMQ Awareness						
MORE-CW (<i>n</i> =11)	26.18 (6.76)	28.72 (6.07)	-1.83 (10)	.36 [-.04, .83]		
Control (<i>n</i> =10)	28.40 (4.03)	24.20 (4.92)	2.45 (9)	.85 [.04, 1.82]*	-3.08 (19)	1.29 [.28, 2.15]**
FFMQ Non-judgment						
MORE-CW (<i>n</i> =11)	26.00 (8.16)	27.64 (6.93)	-1.56 (10)	.19 [-.05, .46]		
Control (<i>n</i> =10)	27.50 (3.50)	24.80 (3.68)	1.76 (9)	.69 [-.20, 1.70]	-2.37 (19)	.74 [.40, 1.85]*
FFMQ Observe						
MORE-CW (<i>n</i> =11)	30.36 (3.80)	31.45 (4.82)	-.73 (10)	.23 [-.43, .93]		
Control (<i>n</i> =10)	27.60 (4.53)	30.00 (4.52)	-1.46 (9)	.48 [-.23, 1.29]	.59 (19)	.25 [-.60, -1.12]
FFMQ Describe						
MORE-CW (<i>n</i> =11)	30.36 (6.63)	30.72 (6.47)	-.28 (10)	.05 [-.34, .45]		
Control (<i>n</i> =10)	27.20 (5.33)	26.80 (5.69)	.22 (9)	.07 [-.58, .72]	-.34 (19)	.14 [-.71, 1.01]

BCOPE Behavioral						
Disengagement						
MORE-CW (<i>n</i> =11)	2.64 (1.12)	2.45 (.82)	.52 (10)	.18 [-.51, .89]	.92 (19)	.39 [-.46, 1.27]
Control (<i>n</i> =10)	2.70 (1.06)	3.10 (1.60)	-.74 (9)	.27 [-.50, 1.08]		
BCOPE Substance Use						
MORE-CW (<i>n</i> =11)	2.91 (1.87)	2.36 (.81)	1.15 (10)	.31 [-.25, .91]	2.05 (19)	.86 [.00, 1.79]
Control (<i>n</i> =10)	2.50 (.85)	3.10 (1.20)	-.225 (9)	.49 [.04, 1.05]*		
BCOPE Positive Reframing						
MORE-CW (<i>n</i> =11)	6.00 (1.79)	6.18 (1.89)	-.43 (10)	.09 [-.35, .55]	-.98 (19)	.77 [-.09, 1.69]
Control (<i>n</i> =10)	6.60 (.84)	5.60 (1.26)	2.02 (9)	.86 [-.15, 2.02]		
Substance Use						
SSI Total Risk						
MORE-CW (<i>n</i> =11)	2.55 (3.05)	1.18 (1.47)	1.70 (10)	.48 [-.12, 1.16]	-.32 (19)	.13 [-.72, 1.00]
Control (<i>n</i> =10)	3.40 (2.88)	1.60 (2.76)	1.59 (9)	.58 [-.23, 1.51]		
Parent-Child Relationships						
PCRI Satisfaction						
MORE-CW (<i>n</i> =11)	29.00 (3.07)	28.91 (2.59)	.15 (10)	.03 [-.40, .46]	-1.30 (19)	.55 [-.31, 1.44]
Control (<i>n</i> =10)	29.30 (1.89)	28.20 (2.62)	2.54 (9)	.38 [.08, .76]*		
Child Abuse Potential						
CAPI Rigidity						
MORE-CW (<i>n</i> =11)	19.55 (14.32)	13.91 (14.86)	2.45 (10)	.36 [.06, .71]*	2.35 (19)	.99 [.12, 1.94]*
Control (<i>n</i> =10)	23.40 (10.61)	27.30 (17.06)	-1.14 (9)	.21 [-.17, .64]		
CAPI Problems with Self/Child						
MORE-CW (<i>n</i> =11)	7.36 (7.21)	5.45 (6.88)	2.12 (10)	.25 [.00, .53]	2.61 (19)	1.10 [.22, 2.06]*
Control (<i>n</i> =10)	3.50 (4.35)	5.70 (6.81)	-1.66 (9)	.30 [-.07, .72]		

		Child Well-Being				
CAPI Problems with Family						
MORE-CW (<i>n</i> =11)	14.18 (16.31)	9.81 (12.12)	1.56 (10)	.26 [-.07, .63]	2.10 (19)	.88 [-.02, 1.82]*
Control (<i>n</i> =10)	20.50 (14.55)	22.90 (15.67)	-1.73 (9)	.14 [-.02, .33]		
CAPI Abuse						
MORE-CW (<i>n</i> =11)	167.55 (124.70)	147.27 (114.73)	1.58 (10)	.15 [-.04, .37]	1.41 (19)	.59 [-.26, 1.49]
Control (<i>n</i> =10)	203.10 (98.07)	214.20 (116.43)	-.60 (9)	.09 [-.23, .43]		
CBCL Total Problems						
MORE-CW (<i>n</i> =9)	62.22 (8.81)	55.11 (10.74)	4.46 (8)	.60 [.35, .99]**	3.83 (16)	1.72 [.71, 2.90]***
Control (<i>n</i> =9)	59.89 (5.16)	61.44 (7.06)	-.97 (8)	.21 [-.25, .72]		
CBCL Internalizing Problems						
MORE-CW (<i>n</i> =9)	58.90 (9.30)	53.00 (11.30)	2.07 (8)	.51 [-.01, 1.13]	2.56 (16)	1.15 [-.20, 2.21]*
Control (<i>n</i> =9)	57.60 (5.90)	60.40 (6.90)	-1.52 (8)	.39 [-.17, 1.04]		
CBCL Externalizing Problems						
MORE-CW (<i>n</i> =9)	60.22 (11.68)	53.44 (12.95)	3.11 (8)	.50 [.17, .91]*	2.50 (16)	1.12 [-.18, 2.18]*
Control (<i>n</i> =9)	59.44 (7.60)	60.11 (7.93)	-.33 (8)	.08 [-.43, .60]		

Note: *n* = sample size; *SD* = standard deviations; Effect Size = Hedges' *g*; CI = 95% confidence interval; *PSI/SF* Parenting Stress Index; *FFMQ* Five Facet Mindfulness Questionnaire; *TMS* Toronto Mindfulness Scale; *IEM-P* Interpersonal Mindfulness in Parenting Scale; *CERQ* Cognitive Emotion Regulation Questionnaire-Short Form; *BCOPE* Brief Coping; *SSI* Simple Screening Instrument for Substance Abuse; *PCRJ* Parent-Child Relationship Inventory; *CAPI* Child Abuse Potential Inventory; *CBCL* Child Behavior Checklist. ^aEffect size estimate follow Cohen's (1988) criteria for .2 = small effect, .5 = medium effect, and .8 = large effect

p* < .05, *p* < .01, Bonferroni Correction ****p* < .002

Research Question 3. Experiences of Participant Stress and Use of Mindfulness

To explore the research question pertaining to parental experiences of stress and use of mindfulness-based coping and parenting techniques, quantitative and qualitative data were collected. Quantitatively, weekly reports of participant stress (SSSQ Distress subscale), coping (Brief COPE Positive Reframing subscale), and mindfulness (TMS Mindful Curiosity and Decentering subscales) were collected at each MORE-CW session to examine trends across participants over time. Figure 5 presents the mean scores across participants engaged in the intervention ($N = 11$) on weekly subscale measures of Distress, Positive Reframing, and Mindful Curiosity and Decentering. A trend analysis of participants' mean Distress scores demonstrate that all data points following the first intervention session ($M = 22.73$, $SD = 7.81$) decrease over time with the most substantial reduction in distress from session five ($M = 22.18$, $SD = 7.64$) to session six ($M = 16.10$, $SD = 4.41$), suggesting positive intervention trends for this domain. For the coping subscale, Positive Reframing, a trend analysis illustrates that participants' coping generally remained stable across time (session one $M = 6.00$, $SD = 1.61$; session six $M = 6.60$, $SD = 1.26$). Finally, trend analyses of the Mindful Curiosity and Mindful Decentering subscales demonstrate that participants' mindfulness also remained fairly stable from sessions one (Mindful Curiosity $M = 16.27$, $SD = 3.64$; Mindful Decenter $M = 17.82$, $SD = 4.47$) through four (Mindful Curiosity $M = 17.90$, $SD = 3.03$; Mindful Decenter $M = 17.80$, $SD = 2.86$). However, there was a slight increase in Mindful Decentering (i.e., the ability to distance oneself from potentially stressful situations, rather than being carried away by one's thoughts and feelings) in sessions five ($M =$

19.27, $SD = 4.41$) and six ($M = 21.00$, $SD = 4.24$), whereas a slight decrease in Mindful Curiosity (i.e., inquisitive awareness of present moment experience) is evident in session five ($M = 17.18$, $SD = 5.53$), followed by an increase at session six ($M = 18.90$, $SD = 5.24$). These trends suggest that, although there may be situational factors that influence parents' weekly experiences of stress, coping, and mindfulness, MORE-CW participants may develop adaptive behavior and skills by week six, and parents may benefit from additional training to further enhance these qualities.

Figure 5. Weekly Mean Scores Across Intervention Participants on Measures of Stress, Coping, and Mindfulness

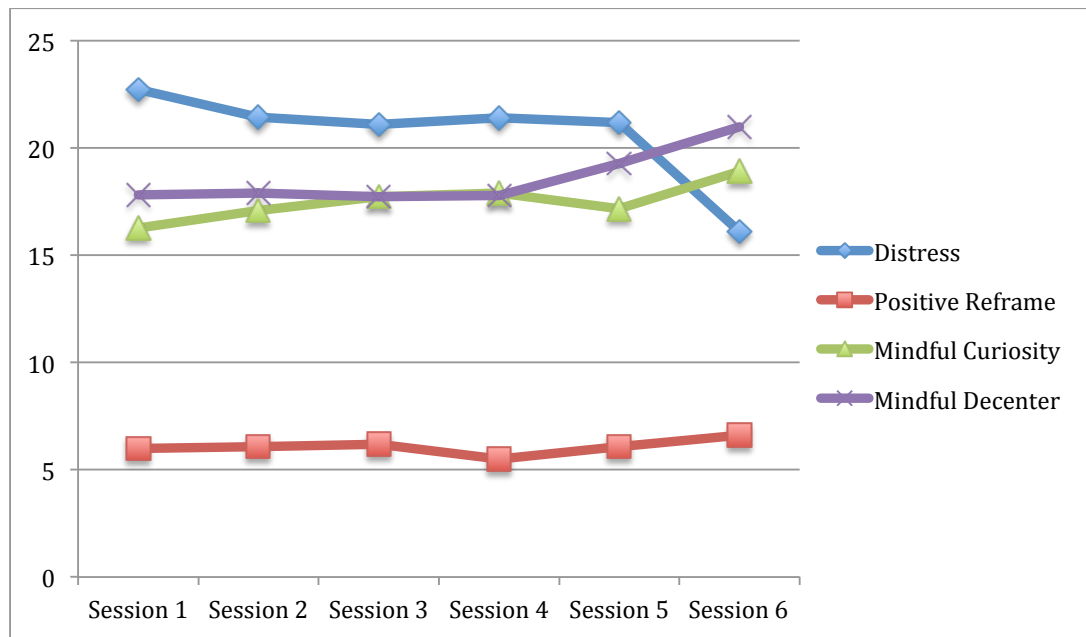


Figure 5. Subscales are derived from the Short Stress State Questionnaire (Distress), Brief Cope (Positive Reframe), and Toronto Mindfulness Scale (Mindful Curiosity and Mindful Decenter).

Qualitatively, MORE-CW participants were asked to describe stressors and use of mindfulness skills utilized weekly. Themes emerging under the category of stress included personal and environmental-related stressors, as well as general difficulties that individuals experienced as a result of the demands placed on them by child- and family-serving professionals. The themes emerging under the categories of mindful coping and mindful parenting were then used to identify the mindful-related skills parents found most beneficial to ameliorate these stress experiences and improve relations with their children.

Stress.

Physical health. Many participants expressed their own physical health as a stressor and barrier to accomplishing tasks. Parents reported prior injuries that caused them distress, with one parent having suffered a severe accident at a younger age that also impacted her ability to meet her children's needs, and subsequently contributed to frustration and feelings of helplessness. For example, this mother stated, "It's the activities throughout the day, whether it be making lunch, dinner, breakfast, or chasing after the kids, that really cause the pain." Participants indicated that their experiences of pain also contributed to their continued use of substances, particularly marijuana. Consequently, for some parents, continued substance use would in turn increase stress related to their child protection cases, as they were to remain substance free.

Employment and financial burden. Participants identified work and/or financial concerns as stressors. Parents who were employed felt that the demands of work were overwhelming at times. These parents reported general dissatisfaction with their place of employment such that they experienced interpersonal conflict with co-workers or

believed that some of their work-related responsibilities were a “waste of time” and they were “doing the same thing over and over.” Irrespective of employment status, the majority of parents identified financial-related problems as a primary source of stress. The influence of economic disadvantage on parenting stress has been corroborated by prior research indicating that material hardship, such as housing instability and duration of financial trouble, increases stress, which in turn decreases positive parenting behavior (Gershoff, Aber, Raver, & Lennon, 2007). Moreover, parents’ financial status has also been shown to serve as a barrier to mandated substance abuse treatment, in terms of the concerns about loss of income due to time spent in treatment, inadequate transportation, and struggles with child care (Rockhill et al., 2008). The interconnected relationship between stress and financial difficulty was evident for one father:

...[I’m] trying to get a job...I’m just plugging along...but now, it seems like everything is hitting me at once. All my bills are coming in. I got child support coming after me now, [coming] after my social security money, which I don’t understand how that can happen...what is that going to leave me? This is all just new...and I’m just overwhelmed by any one thing.

Notably, even after experiencing challenges with finances, parents also demonstrated their motivation to overcome associated distress. For example, when some participants shared their financial burdens, they also made affirmations that they “will be alright” and “it will all be okay.”

Personal relationships. Although parents also worked through stressful experiences by relying on others as forms of social support, the challenges they experienced by their interactions with significant others and from demands within the

family was also evident, and an underlying source of persistent stress. The experiences of parents in this study were that they felt that their partner's did not contribute equally to the parenting role or to meeting the needs of the family. Although parents who were coupled had strong emotional bonds to their partners, they felt considerable tension when it came to addressing these issues. One parent expressed her frustration with her partner:

[James] is being forgetful, and leaving things like half smoked cigarettes on the counters...I'll ask him to clean up the living room after the kids go to bed, and he doesn't do it...it's been stressing me out because, I'm like, I don't want to do the whole entire household maintenance by myself.

Another mother, who spent all of her time at home, caring for her daughter, was extremely bothered by her partner's disinterest for taking over the parenting role when he arrived home from work. She expressed that she sometimes needed a break, and it upset her when he would not acknowledge that she might also experience stress as a stay-at-home mother. These dynamics between parents and their partners thus proved to be an important determinant of conflict within the household and source of stress related to parenting.

Competing pressures from service providers. Parents reported experiencing pressures from child- and family-service providers to complete multiple mandated requirements and problems with multi-tasking to meet basic needs. Specifically, participants described stress resulting from impending pressure from child welfare, service agencies, and other professionals to accomplish various tasks, as well as fear regarding the uncertainty of outcomes if they failed to undertake some of the responsibilities required of them. For example, one parent felt overwhelmed by the idea

of having to apply for jobs and attend educational training to obtain her GED, while trying to think through how to get her daughter to daycare. In describing these experiences, parents appeared to have trouble planning next steps for the future, reasoning quickly when deciding what to do, and adequately shifting between responsibilities, perhaps introducing additional factors that can complicate treatment planning and success such as problem solving skill deficits.

Mindful coping.

Mindful breathing. All participants reported mindful breathing was their most utilized skill. They found that cultivating awareness of the breath helped to physically calm them under conditions of stress. Although some parents had a difficult time shifting focus from their thoughts to prolonged experiences of the present moment, mindfulness of the breath became a “go to” coping practice. For some parents, the breath also became a method to help disrupt the automaticity of substance use. One participant stated she used the breathing to relieve stress just before she went to bed... “to see if [she] could go without smoking pot.” Moreover, participants who had a difficult time staying in the present moment grounded themselves to help focus by counting their breaths in order to attend to their current experience.

Reappraisal. A subgroup of parents learned to incorporate mindfulness techniques to reappraise stressful situations, thereby attaching more positive meaning to them. In practicing this skill, parents recognized that by changing the meaning of the event, they were able to apply more adaptive thinking. In the words of one participant, “When I thought about the bigger picture, I thought maybe this isn’t such a bad thing...maybe I need this to get my kids back.” Another parent stated that she used this

mindfulness-based skill by “remembering everything is temporary and focusing on what is going on right now, not what is going to happen a week from now.”

Attending to child’s needs. Some parents used mindfulness of breath to attend and “tune in” to their children’s needs. They described an increase in “being present” with their children. One parent stated that by seeing her child in the present moment, she was able to understand the possible motivation of his disruptive behavior. This parent stated the skill she learned during the intervention helped her parenting as follows:

With the mindfulness, my brain can be thinking about other things when I’m with the kids, but it’s important to stay in the present moment, so instead of worrying, I will just stop myself and really pay attention to how they are playing and how they are doing, and I will interact with them. And that has tremendously helped me...and I can just be happy with what’s going on right now.

Parents reported, by attending to their children’s needs and seeing them in the moment, their interactions with their child improved. One parent said she was able to stop from “losing [her] cool.” She explained, “I’m thinking of how my kids are looking at me; they don’t know all of the stress I am under, and they don’t need to.” They also expressed belief that their “demeanor” had changed, which may have in turn influenced their relationship with their child. One parent reported that she felt she was not being “tested as much” because she changed her viewpoint on power struggles between she and her son.

In sum, findings suggest this mindfulness-based intervention may be feasible and acceptable to child welfare-involved parents with low-risk substance misuse. Quantitative results demonstrate that the MORE-CW intervention was effective in improving mindful

awareness and non-judgment of inner experiences and HRV recovery. In addition, intervention group parents, compared to control group parents, demonstrated reductions in parenting stress, parental rigidity, problems with self, child, and family, and child behavior problems. However, not all of these outcomes reached statistical significance at the corrected alpha level of .002. Total child behavior problems on the CBCL remained statistically significant at $p < .002$, suggesting that this might be the strongest effect of the intervention and less likely due to chance. Although mindfulness shows promise in positively affecting changes in certain domains of family functioning, qualitative narratives from participants reveal that parents continue to struggle with stressors associated with physical health, finances, personal relationships, and competing pressures from service providers, thereby suggesting that mindfulness-based interventions may be most effective if they are integrated with other parenting and coping techniques that address adaptive functioning in order to help families reach their full potential.

CHAPTER FIVE: DISCUSSION

Extant research has indicated the positive psychological and physiological benefits of mindfulness practice. Specifically, mindfulness-based interventions have been employed within a variety of clinical settings and have demonstrated that mindfulness is associated with reductions in stress (Williams, Kolar, Reger, & Pearson, 2001) and substance misuse (Bowen et al., 2009), and improvements in parent-child relationships (Coatsworth et al., 2010). However, studies of the use of mindfulness-based practices in child welfare has been absent from the literature. As such, this mixed-methods pilot study helps to set a foundation for addressing this important gap by providing initial testing of the feasibility, acceptability, and preliminary efficacy of a brief intervention to teach mindfulness-based skills to child welfare-involved parents with substance misuse.

Intervention Feasibility and Acceptability

The first research question examined the feasibility and acceptability of implementing MORE-CW into public child welfare. The MORE-CW intervention was found to be feasible and generally acceptable, which is unique in that it offers a novel approach to address some domains of family functioning impacted by co-occurring parenting and substance misuse problems in a system that is in need of improved programs. Specifically, the recruitment and retention rates for the current study supported

treatment feasibility. Of the 15 families randomly allocated to the intervention, 11 received at least five of the six sessions. Low attrition may have been due to the intentionally flexible and individualized aspect of the program, as evidence suggests that parents benefit more from programs that are delivered in-home and tailored to meet their unique needs, compared to rigid, group-delivered manual-based programs (Kendall & Chu, 2000).

The use of a mindfulness-based intervention for this sample of child welfare-involved parents with substance misuse was also found to be acceptable. Positive session ratings and qualitative feedback indicated that the MORE-CW intervention was well-received, as parents endorsed multiple benefits of the program. Consistent with previous reports (e.g., Lundahl et al., 2006), a number of participants indicated the individualized nature of the program was especially favorable for them such that it allowed for more continuity between sessions compared to their prior experiences in group settings. Moreover, for many participants, the session specifically pertaining to mindful parenting was the most highly rated. Although mindful parenting techniques were infused within each session, parents noted that, from this later session, they gained the most insight into their experiences and received resourceful information from which they could use mindfulness-based skills as a means to cope with stress in the context of parenting. Perhaps this suggests that future adaptations to the program should include enhanced content on mindful parenting that is introduced at the start of the program and is a central focus in additional sessions, which could potentially replace some of the less preferred content rated by participants.

Although feasibility and acceptability were generally supported, it should be noted that families with higher-risk substance misuse at baseline were more likely to drop out of the study. This finding is consistent with previous research indicating that high-risk substance-misusing parents are often the most difficult to engage in treatment, possibly because of the increased likelihood of having multiple co-occurring risk factors (Oliveros & Kaufman, 2011). One study found that 64% of every 100 parents with substance use disorders involved in the child welfare system complete an intake for services, with only 13% actually completing substance abuse treatment (U.S. General Accounting Office, 1998).

MORE-CW aimed to reduce treatment barriers and bridge the gap between those with higher clinical need and receipt of care. This was accomplished through the in-home and individualized nature of the program, and through the use of promising engagement practices identified in the child welfare literature (e.g., frequent phone contacts, integrated substance use and parenting services within the same service setting; Kemp, et al., 2009; Marsh et al., 2011), which possibly contributed to the acceptability of the program among most of the sample in the current study. However, engaging parents with more self-reported substance misuse in the current study still served to be difficult. Child welfare systems have identified strategies to improve service engagement among parents with substance misuse, one of which incorporates the inclusion of collaborative working relationships with treatment providers and child welfare workers (Marsh et al., 2011). To help facilitate treatment engagement in mindfulness training for this subgroup of parents within child welfare, a more streamlined referral process may thus be needed in which treatment providers attend visits with child welfare caseworkers and health department

nurses in order to build a therapeutic alliance prior to program initiation. Establishing this rapport may in turn move some substance-misusing parents from being unaware of the problematic nature of their substance misuse and subsequent lack of motivation to change to making steps toward recovery. Furthermore, the MORE-CW program was a voluntary program in which parents could choose to complete in addition to their other mandated services. It is hypothesized that the voluntary aspect of the program may have resulted in increased opposition to participate from parents with more treatment needs due to the possibility of competing for parental time and effort as they completed other required services. It is thus possible that integrating mindfulness intervention within mandated services could increase participant recruitment and retention. Further studies would benefit from measuring the specific nuances to participant engagement and drop out among child welfare-involved parents with substance misuse.

Preliminary Treatment Effects

The second research question examined the initial efficacy of the intervention on proximal (i.e., mindfulness, stress, and coping) and distal (i.e., substance use, child maltreatment, parent-child relationships, and child well-being) domains of family functioning. MORE-CW was found to be effective in changing some, but not all, forms of family functioning. Specifically, participating in MORE-CW led to reductions in stress and improvements in mindfulness, parenting, and child behavior problems. The magnitude of the program impact on these quantitative constructs was large, ranging from .74 (mindful non-judgment) to 1.72 (total child behavior problems). This is consistent with prior research that has found that studies with small sample sizes tend to

have greater effect sizes than those with larger samples (Slavin & Smith, 2009). Although effect sizes in small studies are more variable, which may in turn result in a disproportionate number of very positive effect sizes (Slavin & Smith, 2009), random assignment in the current study was used to control for various threats to validity. Study findings nevertheless demonstrate meaningful change on certain domains of family functioning.

Given that stress underlies maltreatment and substance use – both common problems among child welfare-involved families – significant findings regarding the effects of the intervention on self-reported and physiological indices of stress are noteworthy. Studies have found that the ability of parents to employ stress-reduction strategies can positively impact child and family outcomes (Fisher & Stoolmiller, 2008). Specifically, parents who are less reactive and more able to regulate their emotions, thoughts, and behaviors are able to adapt more naturally when exposed to stress (Deater-Deckard, 2004). Therefore, the trends observed among intervention participants may be interpreted as evidence to support the use of mindful practice to target parenting-related stress among child welfare-involved parents. Perhaps changes in parents' self-reported stress and heart rate variability (HRV) demonstrated their capacity to overcome some parenting-related stressors and emotionally regulate during exposure to stressful stimuli, as greater HRV has been associated with the ability to rapidly shift attention and successfully use self-control strategies (Porges, 1992). The use of physiological measurement in child welfare research is almost completely absent, and therefore, these physiological findings particularly add to this literature base by using an objective assessment as an alternative method to capture the effects of intervention on parental

autonomic activity during stress. In addition, although some current child welfare and substance use treatments have been successful at targeting stress to address parenting and substance use, independently, MORE-CW is uniquely designed to do this in a single intervention.

Evidence suggests that intervention approaches that aim to reduce parental stress (e.g., Anthony et al., 2005; Kazdin & Whitley, 2003) and attitudes (e.g., Chaffin et al., 2004; Gardner, Burton, & Klimes, 2006; Moss et al., 2011) by improving parenting may not only prevent future maltreatment, but also improve child outcomes. Findings from the current study suggest that training in mindfulness within the context of parenting may have transferred to parents' interactions with their children. In teaching parents to be more aware of their children's needs and new ways to see their children in present moment parent-child interactions, it may thus make possible more accurate and effective responses to children within the parenting role. Research has found an interconnected relationship between improvements in parent and child mental health and behavioral outcomes such that positive changes in parental behavior and emotion regulation contributed to responsible and sensitive parenting, thereby attenuating child disruptive behaviors (Dawe, Harnett, Rendalls, & Staiger, 2003). However, it is postulated that parents who completed MORE-CW likely developed more appropriate interpretations of child behavior, which may have resulted in an increased acceptance of children's developmental capabilities and behavioral intentions in addition to positive ratings on post assessment measures. This aligns with prior research in which parents who received mindfulness training reported greater ability to attend to children's challenging behaviors, which in turn contributed to better ratings regarding the management of children's

aggressive behavior (Singh et al., 2007). Thus, using mindfulness-based and other cognitive-behavioral methods as possible approaches to target parental stress and perceptions of child behavior may, in turn, meaningfully contribute to the promotion of positive parent-child relations and child behavior.

Despite positive changes in stress, mindfulness, and parenting, parental coping was less impacted by the intervention. Coping encompasses a range of emotional, cognitive, and behavioral strategies. Successful coping depends on coordinating all of these systems under conditions of threat or challenge (Lazarus & Folkman, 1984), and may thus be especially difficult for parents to adapt their coping habits under a variety of stressful contexts. The absence of significant findings on measures of coping is consistent with prior research suggesting that improvements in parental coping (e.g., building social networks) can be a cumulative process, and that small changes during the treatment phase may require additional time before their full benefits are noticed (Dawe et al., 2003). In a brief time-frame, MORE-CW aimed to help parents find positive meaning and reinterpret stressful events, however, the program did not provide parents with a broad range of coping strategies that may be most useful given their unique situations. Without having several specific and practical methods to cope with stressful conditions, parents may be less able to apply coping strategies efficiently and appropriately. As such, mindfulness-based interventions that promote multiple emotional, cognitive, and behavioral strategies will likely improve parents' capacity to cope adaptively under differential conditions of stress. Obtaining additional follow-up information as well as offering booster sessions to help cultivate supplementary mindfulness and adaptive coping skills may also optimize parental coping. Additionally, it may have been hard to detect differences in individual

coping strategies in the present study as a result of inadequate measurement. Two-items comprised each coping subscale, which may in turn be problematic in that the use of multiple, heterogeneous indicators often enhances construct validity (Eisinga, Grotenhuis, & Pelzer, 2013).

Although reductions in stress were found among intervention participants, no significant effects were found for risk of substance misuse. Notably, anecdotal feedback from participants in the intervention group revealed that parents had considerably reduced their substance use prior to the start of the study with parents reporting low levels of substance misuse risk before engaging in treatment. Moreover, their risk of substance use revolved around the need to occupy their free time or the influence of negative peer relationships, factors that parents appeared to have addressed upon their involvement with child welfare. As mentioned earlier, the fact that parents with higher risk levels of substance misuse dropped out prior to study completion suggests only lower-risk parents were involved in this study. The lack of variance in substance misuse among study participants may have therefore impacted the ability to detect significant differences between the intervention and control groups over time. Although statistically significant findings were not found, trends in the data suggest that parents in the MORE-CW group did, in fact, slightly decrease in their self-reported frequency of substance use at post assessment compared to parents in the control group. It is thus important to acknowledge that the intervention may have provided an additional support to parents to assist with their sustained and slight reductions in substance use. Though, additional research examining the impact of MORE-CW on risk of substance misuse is needed to determine if the program, compared to only receiving child welfare treatment services as

usual, has any effect on substance misuse, particularly among parents at high-risk for relapse. It may be that parents would benefit further from a mindfulness-based program that is coupled with an additional targeted substance use intervention, particularly one that inspires motivation to change and concomitantly focuses on child welfare outcomes.

Experiences of Participant Stress and Use of Mindfulness

The third research question explored experiences of stress and use of mindfulness among this sample of child welfare-involved families with substance misuse. To this end, qualitative results provided greater insights into how and when parents used newly developed mindfulness skills. Parents predominantly used mindful breathing to physically calm themselves and reappraisal skills to find positive meaning to cope with stress and negative situations. Parents also enhanced their capacity to attend to their children's needs and cues. Indeed, by reducing parental stress and reactions to stress, MORE-CW may have exerted its effects on adopting a parent- and child-focused orientation such that parents were able to both self-regulate and "step back," thereby responding to their children with less negative emotion and allowing for more accurate perceptions of children's behavior. Given the co-occurrence of impaired self-regulation and substance misuse (Bakhshani & Hosseinbor, 2013), as well as inflexible and automatized parenting and risk for maltreatment (Caliso & Milner, 1992; Dumas, 2005), parents' ability to implement mindfulness techniques is promising. Therefore, applying mindful material to child welfare case planning might importantly contribute to positive changes in several domains of family functioning.

Despite the benefits of mindful practice and preliminary efficacy of MORE-CW, qualitative inquiries of parental experiences of stress demonstrated that certain stressors were still difficult to overcome, and may be unaffected by mindfulness. Specifically, stress primarily arose from personal, economic, and relational factors in addition to pressures from service providers. These findings are consistent with past research indicating that stress in the context of parenting is associated with an interaction of parent, child, and contextual influences (Deater-Deckard, 2004). Because stress often precedes substance use and is associated with child welfare involvement, it was anticipated that parents would identify more stressful triggers associated with persistent substance use. However, only a subsample of participants, particularly those with self-reported physical health concerns, appeared to continue to use substances (e.g., medical marijuana) to alleviate associated discomfort during the course of the intervention. Rather, the results emphasized the cumulative impact of day-to-day stressors associated with meeting basic needs, factors that mindfulness training alone may be unable to address. Without helping child welfare-involved parents to develop skills to cope with stress linked to these daily pressures, parenting could be negatively impacted and additional concerns for children's safety may be introduced when they are in an environment diminished of financial and social resources (Rodriguez, 2010). This argues for supplementing mindfulness training with other skills-based programs to be effective in addressing these multiple sources of stress among families in child welfare.

For some parents, competing pressures from professionals to complete mandated services and acquire myriad physical needs (e.g., financial and job stability, education) may have also served as potential barriers to engaging in the depth of mindfulness

practice. Teaching mindfulness may have helped to strengthen nonjudgmental accepting awareness and parental emotional functioning, thereby enhancing self-regulation and targeting autonomic functions such as physical tensions in the body (Van der Kolk, 2015). However, when these mindfulness techniques are implemented in isolation, the full range of factors that potentially influence the development of adaptive coping and parenting skills may be unaddressed. For example, parents' inability to adequately manage competing pressures and lack of resources may shed light on the need to tailor intervention programs to also target the cognitive capacities of child welfare-involved parents with substance misuse. Because exposure to chronic stress and substance misuse has been shown to impair executive functions (Aupperle, Melrose, Stein, & Paulus, 2012; Piechatek et al., 2009), failure to enhance these skills may contribute to maladaptive coping and ineffective parenting. Executive functioning is involved in the regulation of goal-directed behavior, and includes abilities such as attentional control, planning, cognitive flexibility, and self-regulation (Giancola & Tarter, 1999), which ultimately help people to plan, organize, and complete multiple tasks. MORE-CW led to a greater awareness of parents' sensations, thoughts, and feelings, and may have, in turn, resulted in partial improvements in parental executive functioning, particularly improved attentional control and emotional regulation. However, the ecological context in which the family is embedded (e.g., Harnett & Dawe, 2012), and parents' difficulty in managing competing stressors, highlights the complexities child welfare-involved parents with substance misuse encounter and their need to master other problem-solving capabilities.

To focus solely on enhancing mindfulness among families involved in child welfare could thus limit the possibility of addressing other factors that influence

outcomes for children and parents affected by stress, substance misuse, and maltreatment. Evidence from the current study supports Harnett and Dawe's (2012) proposed integrative framework that mindfulness may be best implemented as part of other intervention strategies informed by dialectical or transactional (e.g., interconnection of individual and context) models of child development and family functioning (e.g., Cicchetti & Lynch, 1993; Sameroff, 2010). Their framework recognizes that mindfulness may only be one component to help families cope with psychological and physiological distress, but other techniques are necessary to help families meet their full potential. Perhaps a reexamination of the screening and assessment tools used to detect individual differences in parental and family functioning is needed to identify appropriate treatment trajectories for families. In addition, it may be that the benefits of mindfulness-based interventions for families would be better delivered within, or complementary to, other intervention strategies (Harnett & Dawe, 2012). Specifically, it might be essential to integrate mindfulness into other skill-building programs (e.g., problem solving, decision-making, case management) or therapeutic interventions (e.g., cognitive-behavior, behavioral modification, micro-social) that focus on possible cognitive functioning deficits in addition to expanding these programs to include two-generational approaches with children. Such integrated models might be most effective at not only helping parents attend to and cope with stress but to also address the tangible challenges and pressures inherent in families' lives.

Limitations

Findings should be considered in light of study limitations. First, this pilot study included a relatively small sample size, which can reduce statistical power and external

validity. It is thus possible that the existing sample did not allow for sufficient power to find statistically significant differences on proximal outcomes of coping and distal outcomes of substance misuse and parental satisfaction. Additionally, the study sample primarily included mothers who identified as White and who were from low socioeconomic backgrounds, limiting generalizability of study findings. Further research will need to investigate whether significant results found here, can be replicated with other, larger, and more representative samples of families involved in child welfare; particularly, those with more significant substance misuse risk, who are racially and ethnically diverse, from higher socioeconomic households, and with fathers as the primary caregiver. A second limitation is that the measures of coping, although validated, were self-report measures completed by the parent that consisted of only two-item indicators. Additional research is needed that includes more heterogeneous measures of coping as well as collateral evidence of change through caseworker, or other family member reports, in addition to observation of parent-child interactions and advanced physiological measurement. Third, the brief time frame (6-8 weeks) in which families were followed-up may not have allowed for sufficient time between the introduction of mindfulness-based material and ability to identify significant differences across all domains of family functioning. Fourth, as this was a pilot study and multiple comparisons of outcomes were conducted, the problem of multiplicity may have increased the likelihood of incorrectly detecting an effect that was not actually present (i.e., Type I error). A Bonferroni correction was applied at an alpha level of .002; however, most of the results that were found to be statistically significant were reported at the traditional .05 alpha level. Although the Bonferroni adjustment can be somewhat conservative when

there are multiple outcomes, future studies implementing mindfulness within child welfare should place appropriate limits on multiple comparisons in order to reduce rates of potential false positives. A final limitation is that the principal investigator had multiple roles throughout the study (i.e., principal investigator, interventionist, data analyst), which may have, in turn, introduced researcher bias from the perspective of the qualitative findings, and increased social desirability bias on behalf of the participants responding to interviews and self-report assessments. Given limited resources available to complete the study, these overlapping roles were unavoidable, but future replication should aim to separate clinical from research staff.

Implications and Future Directions

Nevertheless, the study has several strengths and implications for policy, practice and research. This study represents the first known randomized controlled trial demonstrating the feasibility, acceptability, and preliminary efficacy of a mindfulness-based intervention for child welfare-involved families with substance misuse.

This study also provides the basis for implementing a service approach designed to address factors associated with both parenting and substance misuse among child welfare-involved families. Although the prevention of child maltreatment and concurrent substance misuse is a continuing process requiring multifaceted approaches to address the complex needs of families and unique circumstances surrounding child welfare-involvement, a brief mindfulness-based program may be a useful initial intervention for families. Specifically, brief mindfulness-based practice may not only help to provide new tools that facilitate adaptive responses to stress, but also align with the constraints of the

child welfare system and assist with faster reunification for children placed in out of home care. Increasing access to services through individualized and flexible treatment programs such as the one presented in the current study also has the potential to reduce barriers and enable families to remain in treatment in order to improve familial outcomes, thereby addressing the goals of the child welfare system to achieve a safe and permanent home for children and enhance their well-being.

Targeting stress and its consequences also supports trauma-informed child welfare practice, an essential priority of child- and family-serving systems. A trauma-informed system is one in which programs and professionals act with awareness and have the knowledge of trauma and its effects (Child Welfare Information Gateway, 2015). When professionals understand how to address families' adverse histories, they are better able to provide appropriate services for support (Child Welfare Information Gateway, 2015). Child welfare encounters a high percentage of children and families with histories of trauma and stress of any child- and family-serving system (Ko et al., 2008). Past adversity, coupled with the demands of the child welfare system, may create a chronic state of crisis and distress, thereby interfering with families' ability to successfully cope and adapt to future stressful situations (Banyard, Williams, & Siegel, 2003). The National Child Traumatic Stress Network *Child Welfare Trauma Training Toolkit* offers several suggestions for successful trauma-informed child welfare practice such as providing support and guidance to children and families as a vital element to facilitating post trauma and stress recovery (Ko et al., 2008). Given that parents assigned to the control group slightly worsened on some domains of family functioning, whereas the intervention group remained stable or showed improvements in some outcomes, these

trends may offer support for a mindfulness-based intervention as a trauma-focused approach within child welfare. Without support from the intervention, intervention parents' symptoms of stress may have likely worsened over time, suggesting that engagement in the intervention appeared, for some outcomes, to prevent families from deteriorating, in addition to actually improving other domains of family functioning.

Incorporating mindfulness models within child welfare may further support the recent shifts in child welfare policy away from traditional child protective services towards differential response. Differential response allows child protection an alternative method to responding to allegations of maltreatment (Rodriguez-JenKins & Marcenko, 2014) such that investigations are family-oriented, strengths-based, and voluntary. Some families in the current study met criteria for the family response track associated with differential response in that children were not removed from parental care and no immediate safety concerns existed that would prohibit parents from engaging in services while children remained in the home. Given the significant findings on some domains of family functioning may thus suggest that these families can benefit from brief mindfulness-based training. Differential response is designed to promote a better understanding of the familial issues that lie beneath reports of child maltreatment and engage parents immediately and effectively to use services that meet their specific needs. As such, introducing mindfulness-based approaches that are integrated with other skill-building and therapeutic interventions to families may provide initial support and new strategies to manage the many stressors associated with child welfare-involvement.

Providing services to child welfare-involved families with substance misuse requires comprehensive approaches that are matched to unique family situations,

therefore key adaptations to mindfulness interventions are needed. Based on the challenges described by participants in the current study, several adaptations are recommended to support the cultivation and application of mindfulness and behavior management skills within the context of parenting and substance misuse. Future iterations specific to the MORE-CW intervention may benefit from: (1) streamlining the referral process from the child welfare agency to the provider in order to enhance therapeutic alliance; (2) targeting domains of family functioning through an integrative framework in which mindfulness sits within or complements other programs that concurrently address parenting, substance use, and child development; (3) screening families to identify individual risk profiles to further tailor programs to meet their unique needs; (4) introducing the majority of mindful parenting content upfront and providing parents with more practical parenting skills; (5) adapting substance use material according to severity of use; and (6) offering booster sessions to cultivate regular practice of mindfulness and adaptive coping skills. These suggested adaptations might subsequently provide useful guidelines moving forward for the development of comprehensive and effective evidence-based programs for child welfare-involved families with substance misuse.

A continued commitment to the provision of effective and appropriate services for child welfare-involved families with substance misuse remains and thus further research is warranted. Experts in the field of child and family intervention strongly emphasize the need for research to focus on identifying the complex factors underlying changes in individual and family functioning (Kazdin, 2007). The evidence for including mindfulness into interventions for children and families has been challenged because of the lack of focus on evaluation mechanisms of change (Harnett & Dawe, 2012).

Therefore, an examination of the underlying cognitive, affective, and physiological mechanisms implicated in family functioning from a developmental perspective in addition to identification of the intervening variables associated with the positive effects of mindfulness is needed. This will in turn help to provide malleable targets for intervention and further tailor programs for this vulnerable population. Such advances in research also has the potential to inform the development of screening tools to be used to assess baseline parental and family functioning, thereby offering a more accurate trajectory of intervention approaches to better meet families' immediate and unique needs.

Mindfulness-based programs implemented in the child welfare system should also address the service needs of children. Children's outcomes are strongly impacted by their parents' capabilities and, to be effective, programs should include both parents and their children to affect change in the intergenerational transmission of risk and foster healthy development of vulnerable children. Teaching mindfulness-based skills to not only parents, but also to their children may further promote positive family relationships and help children obtain a sense of psychological and physical safety through sustained attention and self-regulation, thereby affecting long-term developmental and behavioral health outcomes (Dumas, 2005; Harnett & Dawe, 2012). Thus, it is recommended that future research using integrative mindfulness-based strategies include a two-generational approach to treatment and also include independent measures (e.g., behavioral observations) of child outcomes and parental functioning.

Future research should evaluate integrative mindfulness-based interventions on a large scale. Studies should increase sample size, conduct long-term follow-up, obtain

collateral data from others and non-self-report measures, and compare programs to other treatment modalities. Furthermore, this research would benefit from exploring treatment dose to determine how many sessions are needed to achieve effects and which families might benefit more from different components of the intervention. Further refining and improving aspects of MORE-CW or other integrative mindfulness programs could ultimately help families develop a nonjudgmental accepting awareness of present moment experiences while fundamentally shifting the way parents cope with stress, thereby disrupting automatic cycles of maladaptive behavior, and improving parent-child relationships and child well-being.

Conclusion

The results of the current study add preliminary evidence to the sparse body of research and intervention strategies that aim to improve the functioning of families with co-occurring substance misuse and maltreatment. Altogether, the MORE-CW intervention evidenced improvements in some domains of family functioning, suggesting it holds promise as a method that may enhance parenting and ameliorate the risks for children reared in substance-misusing families. These findings also provide support that mindfulness can be implemented in public child welfare and that some parents will engage in home-based mindfulness training. However, additional research is needed to determine whether mindfulness interventions will be more informative if they are integrated into other skill-building and therapeutic programs that help families reach their full potential rather than implemented in isolation.

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APPENDIX A: QUALITATIVE INTERVIEW QUESTIONS

Parent Semi-Structured Interview

In the past week...

1. What were the primary stressors that impacted you and your family?
2. What might have caused the stressor to happen? (*Were there any triggers?*)
3. How did you react when the stressor happened? (*What did parent do after triggered?*)
4. After [the stressors] occurred, what did your body feel like? What emotions did you have? What were you thinking?
5. In what ways did you think about the use of substances in response to the stressor?
6. How did you use what you learned in the MORE-CW sessions to reduce the stressor and improve the way you felt or thought?
7. What stressors impacted your relationship with your child?
8. How did you use what you learned in the MORE-CW sessions to improve interactions with your child?
9. What other coping strategies did you use?