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*Minnesota State University, Mankato*

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EVALUATION OF MBSR ON CHILD EMOTION REGULATION

Evaluation of a Mindfulness Intervention for Children with Emotion Regulation  
Difficulties

By

Stephanie J. Pirsig

A Thesis Submitted in Partial Fulfillment of the

Requirements for the Degree of

Master of Arts Degree

In

Clinical Psychology

Minnesota State University, Mankato

Mankato, Minnesota

July, 2017

# EVALUATION OF MBSR ON CHILD EMOTION REGULATION

July 26, 2017

Evaluation of a Mindfulness Intervention for Children with Emotion Regulation Difficulties

Stephanie J. Pirsig

This thesis has been examined and approved by the following members of the student's committee.

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# EVALUATION OF MBSR ON CHILD EMOTION REGULATION

Evaluation of a Mindfulness Intervention for Children with Emotion Regulation Difficulties

Stephanie J. Pirsig

Master of Arts in Clinical Psychology Program  
Minnesota State University, Mankato  
2017

## **Abstract**

Emotion regulation difficulties are featured in internalizing and externalizing psychological diagnoses and can be seen as a precursor for a severe and persistent mental illness, relationship, and personal problems. Mindfulness based stress reduction (MBSR) is a non-pharmaceutical alternative and may alleviate limitations for medication, cognitive behavior therapy, and dialectical behavior therapy. The purpose of the current study was to evaluate the effectiveness of a MBSR intervention on emotion regulation in children with emotion regulation difficulties and associated psychiatric diagnoses. Five participants, ages 6 to 13 years old, with emotion regulation difficulties were recruited through local psychiatric clinics and participated in an MBSR group intervention that consisted of eight weekly group sessions and at-home practice. Participants were evaluated using a variety of assessments in a pre-post treatment schedule. Effect size data indicates that the MBSR intervention shows promising results across all domains. Results of this study suggest that this MBSR may be a useful as a complimentary treatment for children and adolescents with emotion regulation difficulties.

# EVALUATION OF MBSR ON CHILD EMOTION REGULATION

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## **Introduction**

Emotion regulation is the mechanism of balancing positive, negative, and neutral emotional responses to internal and external stimuli (Gross & Jazaieri, 2014; Mash & Wolf, 2013). Most people have difficulty effectively regulating emotions on occasion, but some have difficulties that reach a pathological level in terms of causing distress and impairment in daily life. Emotion dysregulation refers to a maladaptive process employed when an emotional stimulus is present (Gross et al., 2014). Emotional dysregulation can be manifested in negative affect and behaviors. Often negative affect sets the stage for negative behaviors and can be manifested in symptoms of anxiety, intense discomfort, anger, poorly controlled behaviors or withdrawal. Emotion dysregulation is sometimes referred to as emotional lability or in the case of personality disorders, negative affect (Fruzzetti, Crook, Erikson, Eun Lee, & Worrall, 2009).

Emotion regulation difficulties are a feature in many psychological disorders in the Diagnostic and Statistical Manual, 5<sup>th</sup> edition (American Psychiatric Association, 2013). For example, emotion regulation is a key feature in internalizing disorders including anxiety, depressive, eating, addictive, trauma and stressor-related disorders (American Psychiatric Association, 2013). It is also seen in many externalizing disorders including personality disorders, especially borderline personality disorder, autism spectrum disorder, attention-deficit/hyperactivity disorder, conduct disorder, bipolar disorder, and aggressive children (American Psychiatric Association, 2013).

Prevalence rates of emotion dysregulation, in isolation, are not readily available because emotion regulation difficulties are not specific to a single disorder. Therefore, in order to understand the scope of emotion dysregulation difficulties, it is important to understand the prevalence of psychological disorders that feature emotion regulation difficulties as a prominent symptom. Overall, an estimated 10-20% of all children and adolescents meet criteria for at least one psychological disorder by age 18 years (Cohen et al., 1993). The lifetime prevalence of specific childhood disorders that involve emotion regulation include disruptive mood dysregulation disorder (2%-5%), social anxiety disorder (7%), generalized anxiety disorder (0.9%), ADHD (5%), oppositional defiant disorder (1%-11%), conduct disorder (2%-10%), and autism spectrum disorder (1%; American Psychiatric Association, 2013).

These numbers suggest that many children and adolescents struggle with difficulties regulating emotions. Emotion regulation difficulties represent a skill deficit that if left untreated can lead to negative consequences in personal, family, peer, and school functioning (Fruzzetti et al., 2009). There is also an increased probability of engaging in risky behaviors, such as substance use, aggression, and increased risk of suicide (Fruzzetti et al., 2009).

### **Traditional Treatments and their Limitations**

**Pharmacological interventions.** The most commonly used interventions used to treat emotion regulation difficulties include medication (Cullen, Westlund, LaRiviere, & Klimes-Dougan, 2013), cognitive behavior therapy

(Follette, Darrow, & Bonow, 2009), and Dialectical Behavior Therapy (Cullen et al., 2013; Fruzzetti & Fruzzetti, 2009). Medications prescribed to treat emotion regulation difficulties are determined by the specific diagnosis but generally include selective serotonin reuptake inhibitor (SSRI) antidepressants, mood stabilizers or stimulant medications. Medications can be used alone or combined with psychotherapy (Schoenfelder, & Sasser, 2016). The use of medication can provide rapid relief of psychological symptoms and behaviors; however, often the risks and limitations outweigh the benefits of wide spread use (Greenhill, Pliszka, & Dulcan, 2002). Pharmaceutical treatments have significant limitations including variations in individual effectiveness (Spencer, Biederman, Wilens, Harding, O'Donnell, & Griffin, 1996; Lawrence, Nangle, Schwartz-Mette, & Erdley, 2017), symptom remediation is only effective during continual usage (Lawrence et al., 2017), and non-compliance is common especially with adolescents (Adler & Nierenberg, 2010; McCarthy, Asherson, & Coghill, 2009). Additionally, medication use can lead to side effects, drug interactions, possible increased risk of suicide, unknown long-term effects (Lawrence et al., 2017), and lifelong financial burden. Many parents are reluctant to medicate children due to side effects, unknown long-term use risks, and increased stigmas (Coletti, Pappadopulos, Katsiotas, Berest, Jensen, & Kafantaris, 2012; Dosreis, Zito, Safer, Soeken, Mitchell, & Ellwood, 2003; Graham & Coghill, 2008).

Finally, taking medication does not facilitate skill building or structural changes that ultimately can ultimately build resilience and prevent relapse



(Schoenfelder et al., 2016). While historically pharmacological interventions have been the primary treatment for individuals with emotion regulation difficulties, the American Academy of Pediatrics recently amended its recommendations to suggest clinicians include behavioral therapy with school aged children and as the first line of treatment for young children, prior to medications in the treatment of psychological disorders when possible, due to risks and limitations (American Academy of Pediatrics, 2011).

**Therapy.** Cognitive Behavior Therapy (CBT) is an intensive therapy that seeks to identify and alter maladaptive thought patterns combined with behavior training such as relaxation (Follette et al, 2009). There is a great deal of research that has established the effectiveness of CBT to treat emotion regulation difficulties (Follette et al., 2009) but there are also significant limitations including a high dropout rate, high financial cost to the client due to frequent and lengthy therapy visits, (Fernandez, Salem, Swift, & Ramtahal, 2015; Hans & Hiller, 2013), which could be partially a result of the time commitment necessary to establish new adaptive patterns of thinking and behavior. A primary limitation of CBT is the process of modifying maladaptive thoughts requires judging (i.e., this thought is “bad” and should be replaced with a “good/better” thought) and can lead to purposeful suppression and experiential avoidance which “can increase their occurrence and behavioral impact” (Hayes, 2004, p.15). While the general effectiveness of CBT on a number of psychological disorders is widely accepted, limitations of CBT suggest there is room for improvement.

Dialectical Behavior Therapy (DBT) is an intensive outpatient adaptation of CBT which focuses on validation and skill building to facilitate change. Specific skill components of DBT include mindfulness, distress tolerance, interpersonal effectiveness, and emotion regulation. It typically consists of 26 modules covered over a six-month period which is usually repeated, extending the time to complete treatment to one year. During that time, clients are required to participate in weekly 2.5-hour group sessions and weekly individual skill building sessions with the therapist (Fruzzetti et al., 2009).

Developmentally appropriate adaptations of DBT with adolescents for treating eating disorders, suicidality, self-injurious behavior, and bipolar disorder have shown promise, yet few studies have been conducted to support effectiveness or appropriateness with some populations (Montgomery, Kim, Springer, & Learman, 2013). At the time of this investigation, no studies were found using DBT with subjects younger than 12 years old. However, even with adult populations, DBT availability faces several challenges including agency financial cost to both the agency and potential clients, staff availability and turnover rates, time commitment to competently train staff, program sustainability, and client recruitment (Carmel, Rose, & Fruzzetti, 2014; Herschell, Kogan, Celedonia, Gavin, & Stein, 2009), especially in rural areas due to the intensive training and treatment. According to the Linehan Institute, DBT is a “team-based” approach and requires teams of at least three staff in order to implement the program with fidelity. Intensive training, knowledge, practice, and expert

supervision, including mindfulness skills, are among the minimum requirements for clinicians to gain competency in facilitating DBT skills groups (Behavioral Tech, 2017).

### **What is Mindfulness?**

Mindfulness is an intentional state of awareness, focused on the present moment with a non-judgmental or accepting attitude. Mindfulness is a major tenant of Buddhist philosophy, which suggests that through the practice of mindful meditation one can achieve enlightenment and compassion for all beings (Shapiro, Carlson, Astin, & Freedman, 2006). In the Buddhist belief system, human suffering is a result of judging and striving. The individual judges whether a situation, thought, or emotion is “good” or “bad” then, strives for those things that are judged as “good” while avoiding, suppressing, or fearing those defined as “bad” (Nyklicek, 2011). This theory is supported by research completed in the last 30 years that suggests suppression or avoidance of thoughts can amplify their frequency and negative impact (Cioffi & Holloway, 1993; Clark, Ball, & Pape, 1991; Wegner, Schneider, Carter, & White, 1987).

Several researchers have theorized the mechanisms by which mindfulness practice improves psychological and physical distress and well-being. Although terminology throughout the various theories is inconsistent, a vein of commonality can be seen which explains that mindfulness and acceptance based treatments involve a shift in the relationship one has with their thoughts and emotions. In a review and meta-analysis of meditation studies Gu and colleagues

identified strong evidence for cognitive and emotional reactivity (stimulus triggered reactions resulting in dysfunctional attitudes, or frequent intense emotions), and moderate evidence for mindfulness (paying attention on purpose in a non-judgmental way) and repetitive negative thinking (RNT; rumination, worry, and concerns) as mechanisms of change in mindfulness-based interventions (Gu, Strauss, Bond, & Cavanagh, 2015). “Both mindfulness and RNT significantly mediated the effect of MBIs on mental health outcomes such as anxiety, depression, global psychopathological symptoms, stress and negative affect” (Gu et al., 2015, pp.8).

Through repeated practice of paying attention to internal and external emotional stimuli without judging whether it is “good” or “bad”, the practitioner is able to change the relationship with their thoughts or emotions allowing more distance, objectivity, and tolerance of discomfort. Increased distance, objectivity and tolerance of discomfort facilitates self-regulation, self-management, clarification of values, cognitive, emotional, and behavior flexibility and exposure (Shapiro et al., 2006). This phenomenon has been referred to as decentering, “re-perceiving” (Shapiro et al., 2006), “cognitive defusion” (Kang et al., 2013; Luoma & Hayes, 2009) and/or “mindfulness” (Nyklicek, 2011). In mindfulness practice, the individual is encouraged to practice experiencing internal and external stimuli in a non-judgmental way leading to acceptance rather than suppressing or avoiding uncomfortable thoughts and emotions. In this way mindfulness treatments are similar to other exposure techniques.

It appears as if learning mindfulness skills could be an ideal fit for children and adolescents struggling with emotion dysregulation problems because efforts to regulate emotions in this population often involve avoidance, suppression, or impulsive behaviors that have serious negative consequences (e.g., cutting, lashing out at others) (Macklem, 2008; Silk, Steinberg, & Morris, 2003). Zoogman and colleagues found that mindfulness interventions were particularly effective for symptoms of psychopathology with youth clinical samples but studies with this population were sparse (Zoogman, Goldberg, Hoyt, & Miller, 2015). However, mindfulness and emotion regulation have been found as negatively associated with suppression, avoidance and rumination in adults (Desrosier, Vine, Klemanski, & Nolaen-Hoeksema, 2013; Nyklicek, 2011).

Recently, several neurological and physiological studies have linked mindfulness practice with structural changes in brain regions associated with emotion regulation, self-awareness, increased pain tolerance, metacognitive introspection, behavioral flexibility, decision making, attention, stress, and memory (Fox et al. 2014; Guendelman, Medeiros, & Rampes, 2017; Kang et al., 2013; Sanger & Dorjee, 2015). Repeated practice of mindfulness exercises was found to activate neuropathways which overtime leads to structural changes (Guendelman et al., 2017; Kang et al., 2013). Neurodevelopmental findings show that children and adolescents' brains are more malleable, suggesting earlier interventions may lead to greater improvements in emotion regulation processes (Sanger et al., 2015). Changes in brain structures suggest lasting and more

automatic improvements in emotion regulation and psychological distress over time.

### **What is Mindfulness-Based Stress Reduction?**

Mindfulness-based stress reduction (MBSR) was originally developed by John Kabat-Zinn as a complementary therapy for individuals effected by medication resistant pain. It is a structured eight-week experiential intervention which consists of weekly group sessions and encourages at-home formal and informal practice. Kabat-Zinn (2013) outlined 7 principles of mindful attitude to approach mindfulness practice with: Non-judging, patience, beginner's mind, trust, non-striving, acceptance, and letting go.

Since its creation in the late 1970s MBSR interventions have been utilized with many clinical and non-clinical groups. It has been established as an evidence based practice for many disorders, symptoms and conditions with adults including: pain management, depression, anxiety, well-being, emotion regulation, perceived stress, anger, rumination, cognitive disorganization, post-traumatic avoidance (Keng, Smoski, & Robins, 2011).

### **Limitations of Treatment as Usual (TAU) Addressed through Mindfulness**

Medications are limited to specific symptomology leading to possible additional medications needed to treat compound symptoms, while, skills-based treatments, including MBSR, can ameliorate a wide range of symptoms through generalization. Previous research suggests mindfulness-based intervention can be effective across a number of domains and have been employed in the treatment of

somatic and psychological complaints (Zoogman et al.,2015). MBSR treatments can also provide advantages over pharmacotherapies by eliminating risks associated with side effects, drug interactions, unknown long-term effects, facilitating structural changes in the brain leading to lasting automatic responses to stimuli, and reducing stigma associated with prescription medication (Zoogman et al., 2015).

Mindfulness practice is unique from other treatments such as CBT, DBT, and psychoanalysis in that changes occur without directly attempting to alter the content of maladaptive thoughts, emotions, behaviors, or psychological symptoms. Mindfulness and acceptance-based treatments do not encourage suppression or avoidance. Instead, the individual is taught to mindfully experience the content of aversive private events so that over time these events become less distressing and less likely to evoke impulsive reactive behaviors that have negative consequences. By purposefully paying attention in a non-judgmental way, the individual experiences stimuli but the relationship with those thoughts and feelings are modified making thoughts and feelings less distressing. Mindfulness and emotion regulation are negatively associated with suppression, avoidance and rumination (Nyklicek, 2011).

Smith and colleagues conducted a study comparing MBSR with a cognitive behavioral stress reduction (CBSR) protocol and found subjects in the MBSR group showed greater improvements on outcome measures of perceived stress, depression, psychological well-being, neuroticism, binge eating, energy,

pain, and mindfulness compared with the CBSR subjects. Additionally, they found CBSR was mildly associated with a decrease in mindfulness. “The accepting and observant attitude emphasized in MBSR may facilitate the growth of mindful awareness, while the focus on judging and changing thoughts and feelings in CBSR may have actually helped to shut it down” (Smith, Shelley, Dalen, Wiggins, Tooley, & Bernard, 2008, pp. 256)

MBSR protocols suggests that practitioners establish a regular mindfulness practice of their own prior to teaching mindfulness (Saltzman, 2014), which can be time consuming. However, training in mindfulness meditation is readily available through many books, audio files, online trainings, and weekend retreats. Provisional certification standards for implementing MBSR programs include completion of an eight week MBSR training program, consistent personal practice, and attending a five-day silent retreat (Center for Mindfulness, 2017). Mindfulness treatment sessions are commonly led by a single practitioner, rather than a team, and most courses are eight-weeks in length, rather than 12-months, which minimizes many barriers to DBT and CBT implementation.

While mindfulness based interventions, specifically MBSR, have been studied with increasing popularity, studies applying mindfulness with children and adolescents are yet emerging. Those that have been conducted, thus far, have been primarily feasibility and acceptance studies (Burke, 2010; Tan, 2016). Mindfulness studies with children can be categorized in to three broad types: school, parent/child, and clinical interventions. Most studies of the effects of



MBSR with children and adolescents have focused on non-clinical samples, primarily in school setting, or with parent-child pairs (Kallapiran, Koo, Kirubakaran, & Hancock, 2015; Zoogman et al., 2015). At the time of this study, few studies examined pre-adolescent clinical samples outside of school or in parent-child dyads.

### **Previous Research Applying MBSR in Child and Adolescent Samples**

Saltzman and Goldin (2008) conducted a pre/post waitlist control group study using a developmentally appropriate adaptation of the original MBSR protocol developed by Jon Kabat-Zin. Participants were a community sample of 24 high-functioning, middle-class families with a total of 31 children in grades 4-6, and 27 parents. In addition, the waitlist group consisted of eight children and parent pairs. Overall improvements in attention, emotion, and metacognitive functioning were demonstrated in both parents and children. Children, especially, showed improvements in self-judgement and self-compassion. Children also showed improvements in cognitive control and decreased negative emotional response to physical and social threats but parents showed greater improvements in cognitive control and decreased negative emotional response to physical and social threats than children. Parents, but not children, showed reductions in anxiety and depressive symptoms. Additionally, frequency and duration of time spent on at-home mindfulness practice predicted greater improvements in depressive, attention, and metacognitive function symptoms (Saltzman & Goldin, 2008).

Biegel, Brown, Shapiro, & Schubert (2009) conducted a 2 x 3, experimental control waitlist with assessments measured at pre, post, and at 3-month follow-up. Participants included 102 adolescent patients at a psychiatric outpatient clinic with various psychological disorders. The intervention protocol was a modified MBSR program (8 weekly group sessions, with daily at-home practice). Results found the MBSR group saw significant improvements in diagnostic symptoms, especially depressive, anxiety, and somatization symptoms, sleep quality, self-esteem, perceived stress, interpersonal relationships and obsessive symptoms compared to TAU. Boys showed greater overall improvements than girls. Rate and frequency of at-home sitting practice was positively related to improvement (Biegel et al., 2009; Huppert & Johnson, 2010).

### **Purpose**

The purpose of this study is to determine the acceptability and effectiveness of a mindfulness-based stress reduction group on emotion regulation and mindful attitude in youth with emotion regulation difficulties and associated diagnoses. It was hypothesized that active participation in a brief, mindfulness intervention would facilitate a reduction in symptoms and associated behaviors of emotion dysregulation and an increase in mindful attitudes following the eight-week intervention. Contrasting evidence has been found for moderation effects of frequency of at-home practice on effects of MBSR with youth (Biegel et al., 2009; Huppert et al., 2010; Kuyken et al., 2013; Zoogman et al., 2015). Even so, it was hypothesized that frequency of at-home practice would impact results of

the MBSR treatment. Additionally, changes in mindful attitude were expected to predict changes in emotion regulation.

## **Method**

### **Participants**

Participants were recruited through a MBSR therapy group for children and adolescents, ages 6-18 years old, who had a previous psychiatric diagnosis with emotional dysregulation features and were willing to commit to attend the eight-week intervention on a regular basis. The therapy group was promoted through psychological clinics throughout a medium sized Southern Minnesota city. Participants were referred to the MBSR course by their primary therapists. The initial referral total was  $n = 8$ , however, three referred participants were not able to participate due to schedule conflicts but noted that they would be interested in participating in a later course. Exclusion criteria was individuals with “severe developmental disabilities.” There were no referred participants who met exclusion criteria.

Prior to the first mindfulness session, children and their parents were informed of the option to participate in this study, including the potential benefits, risks, and commitment requirements. Parent/child dyads who agreed to participate in research completed consent and assent forms. Participation in the study did not affect ability to participate in the therapy group. The resulting group size was a clinical outpatient sample ( $N = 5$ ), of 6 to 13-year-old children with emotional regulation difficulties with diverse diagnoses. Of the five participants, there were

3 boys and 2 girls, with a mean age of 9.20 years ( $SD = 2.59$ , range = 6 - 13).

Four of the five participants were siblings from a single-parent immigrant Middle-Eastern family. The one participant was Caucasian.

All participants were previously diagnosed with a psychiatric disorder with associated emotion regulation difficulties. One participant was diagnosed with adjustment disorder with mixed emotions, the remaining four participants had a diagnosis of post-traumatic stress disorder, according to parent reports. None of the participants had prior experience with mindfulness, meditation, or acceptance exercises. None of the participants were taking prescription medications prior to or following the MBSR treatment. All participants had been meeting regularly with a therapist and skills worker prior to participation in the MBSR group which continued throughout the study.

### **Measures**

Parent and child self-report assessments were administered pre-and-post intervention to assess emotion regulation, mindful attitude, experience with mindfulness, and acceptability of the intervention. Additionally, daily observations of primary problematic behaviors and at-home practice logs were collected. Parent forms/assessments included the consent form, entry/demographic form, Behavior Assessment System for Children, Second Edition (BASC-2) Parent Rating Scale (PRS), Direct Behavior Frequency Recording (DBR) forms, and an exit/satisfaction survey.

Child participant forms/assessments included the child assent form, the Child and Adolescent Mindfulness Measure (CAMM), BASC-2 Self Report of Personality (SRP), At-Home Practice Log, and child exit/satisfaction survey. A researcher was present during the completion of adult and child assessments to answer questions or assist as necessary at pre-intervention. At post-intervention, a researcher was present to assist participants, however, parents were able to complete post assessments on their own and return to a researcher within three weeks following the final session.

**Behavior Assessment System for Children, Second Edition (BASC-2).**

The BASC-2 is a multi-dimensional, multi-component instrument that is widely used to assess symptoms and assist in diagnosis of psychiatric and learning disorders in children and adolescents. BASC-2, SRP and PRS were used in this study. The BASC-2 includes normative data for both general and clinical samples. For the purposes of this study, clinical samples were used to score against each of the assessments due to possible ceiling effects using general norms with individuals with symptom scores in the clinical range. BASC-2 Assist® software was used to score each assessment. For most composite and scale scores on the BASC-2 higher scores indicate greater clinical significance or impairments. Scores in the normal range are balanced to a score of 50, scores in the “at-risk” range are 10-19 points above 50, scores in the “clinical” range are 20 or more points above 50. Adaptive and Personal Adjustment composite and scale scores are reversed where lower numbers indicate impairment in that area, “at-risk”

scores are from 10-19 point below 50, and “clinical” scores are 20 or more points below 50.

The BASC-2, SRP is a developmentally appropriate self-report assessment with two forms based on the age of the individual. The child form is for ages 8-11 and the adolescent form is appropriate for individuals who are ages 12-21. One participant did not complete the BASC-2 SRP because s/he fell below the recommended age range for the child SRP. Therefore, four participants completed the SRP. Both forms of the SRP contain two types of questions, true/false and four point Likert-type questions from “never” to “almost always.” The child form is a 139-item questionnaire and the adolescent version is a 176-item questionnaire

Although the BASC-2, SRP and PRS can be scored in a variety of ways, for the purposes of this study, scale and composite scores were examined. Scales of the BASC-2, SRP include Attitude to School, Attitude to Teacher, Atypicality, Locus of Control, Social Stress, Anxiety, Depression, Sense of Inadequacy, Attention Problems, Hyperactivity, Relationship with Parents, Interpersonal Relations, Self-Esteem, and Self-Reliance. Clinical combined scale scores have a strong internal consistency for both children ( $\alpha = .69 - .83$ ) and adolescents ( $\alpha = .68 - .89$ ) (Reynolds & Kamphaus, 2004). Composite scores on the BASC-2, SRP are determined by combining relevant scale scores as follows: School Problems (combines Attitude to School and Attitude to Teachers scale scores), Internalizing Problems (combines Atypicality, Locus of Control, Social Stress, Anxiety, Depression, Sense of Inadequacy, and Somatization Scale Scores),

Inattention/Hyperactivity (includes Attention Problems and Hyperactivity scale scores), and Personal Adjustment (includes Relations with Parents, Interpersonal Relations, Self-Esteem, and Self-Reliance scale scores). In addition, the BASC-2 provides an overall composite score which examines all scales as a whole in the Emotional Symptom Index Mean T Score. All clinical combined composite scores have an internal consistency range of  $\alpha = .85 - .95$  for children and  $\alpha = .84 - .96$  for adolescents (Reynolds et al., 2004).

Scales of the BASC-2, PRS include Hyperactivity Aggression Conduct Problems Anxiety, Depression Somatization Atypicality, Withdrawal Attention Problems, Adaptability Social Skills Leadership Activities of Daily Living Functional Communication. Scale scores have an internal consistency... child ( $\alpha = .77 - .91$ ) and adolescent ( $\alpha = .79 - .90$ ). Composite scores are compiled by combining scale scores as follows: Mean T Score Behavior Symptom Index, which is determined as a holistic combination of all scales; Externalizing Problems, which combines Atypicality, Withdrawal, Hyperactivity, Aggression, Conduct Problems scale scores; Internalizing Problems, which combines Anxiety, Depression, and Somatization scale scores; Behavior Symptom Index, which combines Atypicality, Withdrawal, Attention Problems scale scores; and Adaptive Skills, which combines Adaptability, Social Skills, Leadership, Activities of Daily Living, and Functional Communication scale scores. All clinical combined scales have strong internal consistency for both child ( $\alpha = .92 - .96$ ) and adolescent ( $\alpha = .92 - .96$ ) measures (Reynolds et al., 2004).

**Children & Adolescent Mindfulness Measure (CAMM).** The CAMM is a 10-item, 4-point Likert-type questionnaire used to assess present-moment awareness and nonjudgmental, non-avoidant responses to thoughts and feelings. Higher scores on the CAMM represent higher levels of mindfulness. Psychometric analysis shows strong internal consistency ( $\alpha = .81$ ; Greco, Baer, & Smith, 2011).

**DBR-Frequency.** Direct Behavior Event Frequency Record (DBR) was created for parents or guardians to record the frequency of the primary behavior problem of each participant. Parents were asked to describe the primary problematic behavior of each participant to monitor throughout the week. A researcher operationally defined the behavior based on the description of the behavior provided by the parent. The operational definition of the primary problematic behavior was written on the DBR by the researcher. Parents were given a copy of the DBR at each weekly session to record the date and time each day and place a tally mark in the corresponding box each time the behavior occurred during that period. Parents were asked to return the DBR form to the group session each week and receive a new form for the following week. However, low collection rates of completed DBRs prevented observational data from contributing to the findings. An example of the DBR can be seen in Appendix A.

**At-Home Practice Log.** An At-Home Practice Log was included as part of the MBSR protocol in order to calculate the effect of rate of practice on



treatment outcomes. At the end of each group session, a blank practice log was distributed to each participant. Instructions were given to complete the practice log each day and return the practice log at the following group session.

Unfortunately, completed forms were not consistently returned to the weekly group at rate that would allow for any meaningful predictions.

**Parent Exit Satisfaction Survey.** The parent exit survey included the following questions: “Did the group meet your expectations?” “How would you rate your experience?” “Is your child prescribed medication? If so, what is the medication and dosage?” “Have there been any medication changes since starting the group?” “Have you or your child used any of the exercises outside of the group? If so, how often?” and “Would you recommend this group?” Space for additional comments was available at the end of the survey.

**Child Exit Satisfaction Survey.** The child exit survey included the following questions: “Did the group meet your expectations?” “How would you rate your experience?” “What were your favorite parts of the program?” “What were your least favorite parts of the program?” “Have you used any of the exercises outside of the group? If so, how often?” “Would you recommend this group to a friend?” and “What would you tell a friend about this group?” Space for additional comments was available at the end of the survey. An activity at the closing of the final session, participants were asked to write a letter to a real or fictitious friend to tell them about their experience in the MBSR group. Copies of the resulting letters were collected as additional qualitative data for this study.

### **Procedures**

The MBSR course sessions were held at an outpatient psychology clinic. A pre/post quasi-experimental design was implemented where outcome measures were completed pre-treatment (same day prior to first session) and post-treatment (within three weeks following the final session). Pre-and post-treatment assessments each took approximately 20 to 30 minutes for each participant and parent. Participants completed pre-treatment assessment in the reception area. Participants completed post-treatment assessments in the therapy room at the end of the final group session. The therapist was available to assist and answer any questions participants had while completing assessments. One parent completed pre-and post-treatment assessments in the reception area of the clinic. The other parent completed two of the pre-treatment assessments in a private room with the researcher present to assist or answer any questions. The remaining two pre-treatment assessments and four post-treatment assessments were completed by the parent outside of the clinic and returned within three weeks following the final group session.

Child demographic data were collected from the parents at pre-treatment including: gender, age, and clinical diagnosis. In addition, parents were asked, “Is your child currently prescribed medication? What is the medication and dosage?” “What is your primary concern?” “Do you or your child have any previous experience with mindfulness, meditation or acceptance exercises? If so, please explain.”

“A Still Quiet Place” (Saltzman, 2014) was the MBSR program that was utilized for this study given that it is a developmentally appropriate MBSR program, adapted for children and adolescents. The eight-week manualized intervention includes 60-90 minute, weekly group sessions and encourages daily formal and informal at-home practice exercises lasting 5-30 minutes each day. Each weekly group session involved exercises in mindful listening, mindful eating, a review of at-home practice (all sessions except for the first), introduction to a new skill (all sessions except for the final session), and new at-home practice assigned. See Appendix B for a table of each week’s activity agenda. The group facilitator was a licensed psychologist who completed an online MBSR course, had an established personal practice and experience providing MBSR and other mindfulness-based training to clients for over two years.

All five participants who started the course completed the course. One participant attended at all eight group sessions, while the remaining four participants attended five group sessions. Participants who missed group sessions were provided that week’s curriculum during their individual therapy session the following week. Attendance without make-up sessions was 70%. Attendance with make-up sessions was 100%. Although makeup sessions were shorter in duration than group sessions, all materials were covered and participant and therapists engaged in all exercises. All components of the study were approved by the Minnesota State University, Mankato Institutional Review Board.

### **Statistical Analyses**

Due to the small sample size, a parametric inferential statistical analysis would not have sufficient power to accurately detect change from pre-intervention to post-intervention. Thus, Wilcoxon signed rank tests were conducted on pre-intervention and post-intervention scores on the BASC-2, SRP Scale and Composite scores, BASC-2 PRS Scale and Composite scores, and CAMM scores. Effect size classification was determined by Cohen (1988) in the determination of magnitude of effect; specifically, a small effect was defined from 0.2 to 0.49, a medium effect from 0.5 to 0.79, and a large effect of 0.8 and greater. Effect sizes utilized the Morris and DeShon's (2002) equation 8 to correct for dependence of means in a within-subjects comparison.

## Results

### What is the Effect of MBSR on Symptoms of Emotion Dysregulation?

**Internalizing Symptoms.** Table 1 is the first table displays the means, standard deviations, z-scores, significance, effect sizes, and effect size classifications of the BASC-2 PRS and SRP Composite and Scale scores related to Internalizing symptoms.

The Emotional Symptoms Index (ESI) is an overall measure of the level of emotional disturbance, especially related to internalizing symptoms. The ESI composite score is comprised of the scales Social Stress, Anxiety, Depression, Sense of Inadequacy, Self-Esteem, and Self-Reliance. A large negative effect was determined ( $d = 3.63$ ) for ESI scores following the treatment. Average ESI scores at pre-treatment were in the “at-risk” range ( $M = 61.75$ ,  $SD = 3.30$ ), however,

following treatment, average ESI scores were in the normal range ( $M = 47.00$ ,  $SD = 4.83$ ).

The SRP Internalizing Problems composite score is comprised of Atypicality, Locus of Control, Social Stress, Anxiety, Depression, and Sense of Inadequacy SRP scale scores. A large negative effect was found for Internalizing Problems composite score ( $d = 13.77$ ) which suggests participants' internalizing symptoms were improved following the treatment.

Examining the changes in the specific internalizing scale scores, a medium negative effect size difference was found for Sense of Inadequacy ( $d = 0.73$ ) and a large negative effect size difference was found in Atypicality scores ( $d = 1.42$ ), Locus of Control scores ( $d = 2.52$ ), Social Stress scores ( $d = 11.69$ ), Anxiety ( $d = 1.88$ ), and Depression scores ( $d = 6.02$ ) following the mindfulness course.

The Internalizing Problems composite score on the PRS is comprised of the PRS scales Anxiety, Depression and Somatization. A small negative effect was found in the PRS Internalizing Problems composite score ( $d = 0.46$ ). An examination of the scale scores influencing the Internalizing Problems composite on the PRS show a negligible negative effect for scores of Anxiety ( $d = 0.07$ ), a small negative effect size difference on Somatization ( $d = 0.28$ ), but a large negative effect size difference on Depression ( $d = 0.99$ ) following completion of the mindfulness course. While symptoms of anxiety remained relatively steady, symptoms of somatization and depression saw improvements. The greatest

magnitude of improvement following the treatment course was seen in Depression scores.

**Externalizing Symptoms.** Table 2 displays the means, standard deviations, z-scores, significance, effect sizes, and effect size classification of the BASC-2 PRS and SRP Composite and Scale scores related to Externalizing symptoms.

The Behavioral Symptoms Index (BSI) composite is a broad measure of the overall severity of problem behavior. The BSI composite is a broad score that encompasses the scales Hyperactivity, Aggression, Depression, Attention Problems, Atypicality, and Withdrawal. BSI scores at pre-treatment were in the “clinical” range ( $M = 84.60$ ,  $SD = 8.68$ ), and following treatment BSI scores remained in the “clinical” range ( $M = 73.80$ ,  $SD = 16.10$ ). However, a medium negative effect in BSI scores ( $d = .68$ ) was found following participation in the treatment course, suggesting moderate improvement on this measure.

The Inattention/Hyperactivity composite score is composed of the Hyperactivity and Attention Problems scales on the SRP measure. A small negative effect size difference was found in the Inattention/Hyperactivity composite score ( $d = .33$ ) following the treatment course. However, pre-treatment Inattention/Hyperactivity scores were heightened but not outside of the normal range ( $M = 58.50$ ,  $SD = 11.90$ ) which limited the potential for improvement.

Effect sizes on the specific scales of the Inattention/Hyperactivity composite measure showed a negligible negative effect for the Hyperactivity scale

scores ( $d = 0.16$ ) but a small negative effect size difference for Attention Problems ( $d = 0.39$ ), indicating all changes in the Inattention/Hyperactivity composite score could be attributed to participants' decreased problems with attention.

The Externalizing Problems composite score is determined from a combination of the PRS Hyperactivity, Aggression, and Conduct Problems scale scores. A large negative effect size difference was found for the Externalizing Problems composite score ( $d = .87$ ) following treatment.

Examining the specific scales scores that contribute to the Externalizing Problems composite score, a medium negative effect size difference was found for Hyperactive ( $d = 0.51$ ) and large negative effect size on scales Aggression ( $d = 0.82$ ) and Conduct Problems ( $d = 1.18$ ) following participation in the treatment course. A reduction was seen in all externalizing symptom behaviors with the greatest improvements in behaviors associated with rule-breaking and verbal and physical aggression. Hyperactivity and Aggression scale scores at pre-treatment registered in the "at-risk" range. Following treatment Hyperactivity and Aggression scores no longer exceeded the "at-risk" threshold. Figure 1 displays the results for individual participants on the Aggression Scale pre-treatment and post-treatment.

### **Do participants Display Changes in Mindful Attitude Following MBSR?**

A Wilcoxon signed rank test revealed no significant difference in CAMM scores following the intervention,  $z = -1.84$ ,  $p = .07$ , although a large positive

effect ( $d = 1.37$ ) occurred. The mean score on the CAMM increased from pre-intervention ( $M = 17.80$ ,  $SD = 5.72$ ) to post-intervention ( $M = 24.60$ ,  $SD = 8.74$ ), indicating an improvement in participants' mindful attitude. As noted earlier, higher scores on the CAMM indicate a higher degree of mindful attitude. A large effect size coupled with an increase in means of the CAMM assessment suggests that participants increased mindful behaviors and awareness from pre-intervention to post-intervention.

### **Does Frequency of At-Home Practice Impact the Effect of the MBSR Treatment?**

Parent and child exit surveys indicated all children used mindfulness exercises outside of the group sessions. However, completed forms were not consistently returned to the weekly group at rate that would allow for any meaningful predictions.

### **Does Participation in MBSR Effect Interpersonal Relationship Quality and Family Dynamic?**

Table 3 displays the means, standard deviations, z-scores, significance, effect sizes, and effect size classification of the BASC-2 SRP and PRS Scale scores related to Quality of Relationships and Self-Perception for each participant.

Two scales on the BASC-2, SRP measure relationship quality: Relationship with Parents and Interpersonal Relations. Relationship with Parents measures the degree to which the individual feels valued and cared for within the



family unit. Interpersonal Relations measures a wider degree of relationships such as teachers, school, or peers. Interpersonal Relations scores reflect the degree the individual relates successfully with other and enjoyment they receive from interactions with others. A small positive effect size difference was detected in the Relationship with Parents scale ( $d = 0.23$ ) but a large positive effect size difference was found on the Interpersonal Relations score ( $d = 1.06$ ). Pre-treatment score on Relationship with Parents ( $M = 49.25$ ,  $SD = 5.74$ ) and Interpersonal Relations ( $M = 47.25$ ,  $SD = 5.74$ ) scales were in the average range. Post-treatment effect sizes suggest that participants continued to feel valued within the family unit but may have gained a better sense of connectedness and enjoyment in relationships with others.

Two scales were used to understand participants' self-perception strengths: Self-Reliance and Self-Esteem. While Self-Reliance scores indicate the individual's confidence and the decision-making ability, Self-Esteem represents a more holistic view of the self, including physical and personal characteristics. A medium positive effect size difference was found on Self-Reliance Scale scores ( $d = 0.77$ ) but a large positive effect on the Self-Esteem Scale ( $d = 4.17$ ). Pre-treatment Self-Reliance scores were within the average range ( $M = 50.50$ ,  $SD = 9.47$ ). However, scores on the Self-Esteem scale indicated near clinical levels of self-esteem ( $M = 33.00$ ,  $SD = 8.52$ ). Post-treatment effect sizes indicate that participants not only gained confidence but viewed themselves as having more

positive attributes. Self-Esteem scale scores were raised to the average range following treatment ( $M = 50.75$ ,  $SD = 11.44$ ).

### **Acceptability of Treatment**

**Child Exit Satisfaction Survey.** Four of the five participants reported that the course met their expectations and rated their overall satisfaction with the course as either somewhat satisfied ( $n = 4$ ) or neutral ( $n = 1$ ). The majority of participants ( $n = 4$ ) reported that they would recommend the course to a friend. When asked what they would tell a friend about the course all participants reported that they would tell a friend that mindfulness is calming or relaxing.

Participants reported their favorite parts of the course were “learning and meeting as a group,” “KungFu (Aikido),” “eating snacks”, “yoga, mindful breathing, body scan,” and “the mindful practices where we put our head down.” They reported their least favorite parts of the program as “not bringing my worksheet accidentally”, “lying down”, “writing and drawing,” and “the day it was on.”

**Parent Exit Satisfaction Survey.** Parents reported that the group met their expectations for four of the five participants and they would recommend the treatment for similar participants. However, parents rated their overall experience for all participants as either very satisfied ( $n = 3$ ) or somewhat satisfied ( $n = 2$ ).

Parents reported that they noticed the participants learned to be more mindful/meditate ( $n = 3$ ), seemed calmer ( $n = 3$ ), used mindfulness techniques to

improve sleep ( $n = 1$ ), and one parent reportedly “saw almost an immediate (positive) change in (participant’s) behavior.”

### **Do changes in mindful attitude predict changes in emotion regulation difficulties?**

The relationship between pre-to post scores of CAMM, BASC-2 SRP broad overall composite Emotional Symptoms Index, and BASC-PRS overall Behavioral Symptoms Index were examined by first calculating the difference scores for all three measures then conducting a Spearman’s rho non-parametric correlation. Results of the analysis indicated a strong positive correlation between mindful attitude and self-report Emotional Symptoms Index,  $r = .95$ ,  $n = 4$ ,  $p = .05$  and a medium strength positive correlation between measures of mindful attitude (CAMM scores) and overall Behavioral Symptoms Index,  $r = .37$ ,  $n = 5$ ,  $p = .54$ .

## **Discussion**

The purpose of this study was to identify the effects of a developmentally adapted 8-week MBSR treatment on emotion regulation with children and adolescents (Saltzman, 2014). It was hypothesized that participation in the treatment would decrease symptoms of emotional dysregulation, increase mindful attitude, quality of relationships, and self-perception. Frequency of at-home practice was hypothesized to have a positive relationship with treatment effects. It was also hypothesized that changes in mindful attitude would be associated with changes in emotion regulation. Overall, participation in the MBSR treatment program was associated with reduced internalizing and externalizing symptoms

and behaviors associated with emotion regulation, improved mindful awareness, quality of relationships, and self-perception. Improvements in mindful awareness were positively related to improvements in internalizing and externalizing symptoms.

Findings from this study are consistent with previous research examining effects of modified MBSR with outpatient adolescents with heterogeneous psychiatric diagnosis on emotion regulation and associated internalizing and externalizing symptoms (Biegel et al., 2009; Tan et al., 2013; Tan et al., 2015). In this study, large effect sizes were seen in both self-report and parent ratings of internalizing symptoms. Specifically, participants self-reported large improvements in locus of control, social stress, depression, and anxiety. Parent reports indicated a large effect in the depression measure but a medium effect for somatization and a small effect in the anxiety measure. The discrepancy between parent and child reports is likely due to internalizing problem behaviors often going unnoticed by others because they are not typically expressed outwardly. When these behaviors are noticed, it can be difficult to accurately identify internal symptoms because behaviors are under strict control by the individual.

Externalizing symptoms are generally more observable than internalizing symptoms because the behaviors are more disruptive to others. Externalizing behaviors often hamper the quality of relationships with family, friends, and teachers. Improvements were seen in all measures of externalizing symptoms from pre-to-post treatment, however, parents reported large effect improvements

in aggression and conduct problems. Aggression and Conduct Problems scales were specific to the PRS assessment and not the self-report, SRP, assessment. While parents' rating scores were within or near the average range at pre-treatment for Aggression and Conduct Problems scales, anger control was indicated as a primary concern of parents at pre-treatment through the DBR target behavior. The SRP assessment included Hyperactivity and Attention Problem scales which saw small improvements but were within the average range at pre-treatment. The clinical relevance of improvements in externalizing symptoms and behaviors, specifically, aggression and conduct problems cannot be minimized due to the effect on a variety of facets of the participants life, mentioned above. It is also clinically significant that parents' primary complaints were addressed through the treatment. When conducting studies in a clinical setting, clinical significance should be a primary goal.

The use of a formal mindfulness measure is a strength of this study. Until recently mindfulness measures for children and adolescents were not included due to a lack of availability (Tan, 2016). A large effect was detected in mindful attitude following the MBSR treatment. Previous research indicates mindfulness is negatively correlated to somatic, internalizing, and externalizing psychiatric symptoms, and positively correlated to quality of life and social skills (Greco et al., 2011; Nyklicek, 2011). The current findings are congruent with previous findings showing a strong positive relationship with internalizing symptoms and a moderate positive relationship with externalizing behaviors. Relationships of this

magnitude suggest that increased mindfulness should result in improvements in psychological symptoms. Further research should continue to investigate mediations and mechanism for change in mindfulness-based interventions with children and adolescents.

Quality of Relationship and Self-Perception scales were primarily derived from the SRP. While all measures showed some improvement in these categories, the most notable changes were in Interpersonal Relations and Self-Esteem scales. Overall, participants' relationships were improved or seen as more positive. These findings are congruent with a qualitative study on the impact of an MBSR treatment program with adolescents with significant psychological concerns, participants reported improvements in mood, self-control, problem-solving, present moment awareness, and relationship quality with self and others (Van Vliet, Foskett, Williams, Singhal, Dolcos, & Vohra, 2017). The present study extends these finding by utilizing a standardized assessment rather than qualitative interviews.

Low self-esteem was one of the most commonly reported primary concerns of parents at pre-treatment. Improvements in self-esteem self-report ratings were large and were supported by parent satisfaction surveys. In a systematic review, Randal, Pratt and Bucci (2015) found positive correlations between mindfulness and self-esteem or general improvements in self-esteem following a mindfulness intervention for adults. The authors noted that effects of mindfulness-based interventions with adolescents showed large positive effects

but children ages 8-11 years old showed no change. They also reported many studies lacked experimental rigour (Randal, Pratt & Bucci, 2015). The current study contrast with previous findings in that improvements in self-esteem were indicated in a pre-adolescent population.

### **Limitations and Future Directions**

The current study provides additional support for the utility of MBSR treatments to foster improved emotion regulation behaviors with children and adolescents. The utility of the study is strengthened by the inclusion of parent reports and a formal mindfulness measure. However, there were many limitations associated with the sample, measurements, and research design which allow room for improvement in future research and MBSR clinical trials.

A primary limitation of this study was the small sample size which limits the generalizability of these findings to the larger population of children and adolescents with emotion regulations difficulties. Additionally, while the sample included participants of various backgrounds, ages, and diagnoses, the age span within the group was larger than ideal and four of the participants were siblings. Including a large age span within the same group may have hampered individuals at lower and higher ends of the age range from receiving optimal benefits from the group environment. Due to the age span, developmentally dependent options within in the treatment design were limited to younger participants which may have affected participant interest of older participants. It is likely that younger

participants lacked some comprehension while older participants lost out on the benefits and buy in of working with peers.

While heterogeneous diagnoses and symptoms within the same treatment group can be seen as a strength of the results, group connectivity and participant roles within the group may have been adversely affected. For example, some individuals may naturally call more attention to themselves while others tend to withdraw. The facilitator was trained and targeted all participants to participate equally, however, more homogeneous groups would allow more balanced participation across participants.

Within the small sample, 80% of the participants were siblings from the same single parent household. In addition to limitations of a large age span, results may have been hindered by the family dynamic. Also, with four participants sharing a single caregiver, the increased burden placed on the parent/caregiver to complete pre-treatment, post-treatment, DBRs, and support each participant likely affected results.

A second limitation of this study was the lack of a control group. Inclusion of a wait-list or active control comparisons would further demonstrate experimental control of results. All participants were active in individual therapy and skills sessions throughout the MBSR treatment. The MBSR treatment was implemented as a complementary treatment. Inclusion of a control group would allow for attribution of effects to the MBSR treatment rather than other ongoing treatments or simple maturation of participants. Additionally, because four of the



five participants were from the same household, it is possible that a change within the home environment contributed to effects seen at post-treatment.

A third limitation was the primary reliance on self-report measures.

Although the self-report assessments collected during this study demonstrated high reliability, they remain subject to other self-report limitations such as bias. Future studies should include additional robust assessments for increased reliability and objectivity of results such as observational data or include additional checkpoints for assessments including increased baseline, intermediate, and/or follow-up data points as suggested in single case design studies. An attempt was made to incorporate observational data through the use of a DBR measure but no conclusions were made from the data collected due to few DBRs returned to the researcher. Future studies should attempt to incorporate a variety of data and ameliorate the barriers of observational data collection and retrieval. Additional parent support is one possible solution to this constraint. In addition, fidelity observations specifically incorporated in the research design would bolster measured results.

### **Conclusions**

Emotion regulation difficulties are common and can lead to behavioral and psychological problems across a number of personal and social domains. Difficulties with regulating emotion in childhood or adolescence predicts psychopathology into adulthood. Often, traditional treatments for emotion regulation difficulties fall short of optimal resolution to these problems. MBSR

treatments may be useful in bridging the gap by reducing limitations associated with TAUs.

Previous studies have investigated the effects of mindfulness-based treatments on a variety of symptoms and disorders, in adults. Few studies have investigated mindfulness effects on clinical child and adolescent populations. The current study adds to the evidence base of developmentally modified MBSR programs targeting a clinical sample of children and adolescents. Improvements in emotion regulation symptoms and behaviors were identified, many with large effect sizes. Additionally, a moderate to strong correlational relationship was found between mindful attitude and internalizing and externalizing markers. However, these results should be viewed with caution due to limitations of the sample and research design. Future research should consider limitations to substantiate findings.

Table 1.  
*Pre- and post-assessment means, standard deviations and effect size of the BASC-2, Internalizing Composites and Scale scores of the Self Report of Personality (SRP) and Parent Rating Scale (PRS).*

Type	Assessment	Pre-M (SD)	Post M (SD)	z-score	Sig. (2 tail)	Cohen's <i>d</i>	Effect size & Direction	# of "At-Risk" Participants Pre-Tx (Post-Treatment)	# of "Clinical" Participants Pre-Tx (Post-Treatment)
Composite	SRP Emotional Symptoms Index	61.75 (3.30)	47.00 (4.83)	-1.84	.07	3.63	Large -	3 (0)	0 (0)
	SRP Internalizing Problems	60.25 (5.62)	48.75 (8.50)	-1.84	.07	13.77	Large -	2 (0)	0 (0)
	PRS Internalizing Problems	97.40 (8.68)	85.60 (18.7)	-0.67	.50	0.46	Small -	0 (0)	5 (4)
Scales	SRP Atypicality	53.25 (14.45)	51.25 (17.06)	-1.29	.197	1.42	Medium -	2 (1)	0 (1)
	SRP Locus of Control	57.00 (12.68)	43.75 (5.44)	-1.83	.068	2.52	Large -	2 (0)	0 (0)
	SRP Social Stress	56.75 (4.57)	45.50 (3.42)	-1.84	.066	11.69	Large -	1 (0)	0 (0)
	SRP Anxiety	66.00 (4.55)	52.00 (11.97)	-1.83	.068	1.88	Large -	3 (1)	1 (0)
	SRP Depression	50.50 (3.32)	42.25 (3.95)	-1.84	.066	6.02	Large -	0 (0)	0 (0)
	SRP Sense of Inadequacy	49.25 (7.04)	44.00 (2.83)	-1.10	.273	0.73	Medium -	0 (0)	0 (0)
	PRS Anxiety	80.60 (7.27)	79.40 (11.89)	-0.14	.892	0.07	Very Small -	0 (1)	5 (4)
	PRS Depression	87.60 (4.51)	71.60 (14.17)	-2.02	.043	0.99	Large -	0 (1)	5 (3)
	PRS Somatization	71.40 (14.43)	64.60 (14.08)	-0.94	.345	0.28	Medium -	1 (2)	3 (1)

*Note:* BASC-2 scores are standardized so that the normal score is set at 50 with a standard deviation of 10 points. SRP scores are based off of four participants, PRS scores are based off of five participants, due to age restrictions of assessments.

Table 2.

*Pre- and post-assessment means, standard deviations, and effect size of the BASC-2, Externalizing Composites and Scale scores of the Self Report of Personality (SRP) and Parent Rating Scale (PRS).*

Type	Assessment	Pre-M (SD)	Post M (SD)	z-score	Sig. (2 tail)	Cohen's <i>d</i>	Effect size & Direction	# of "At-Risk" Participants Pre-Tx (Post-Treatment)	# of "Clinical" Participants Pre-Tx (Post-Treatment)
Composite	SRP Inattention/Hyperactivity	58.50 (11.9)	56.00 (12.2)	-0.54	.59	0.33	Small -	3 (0)	0 (1)
	PRS Behavioral Symptoms Index	84.60 (8.68)	73.80 (16.1)	-1.22	.22	0.68	Medium -	0 (0)	5 (3)
	PRS Externalizing Problems	69.20 (11.3)	61.40 (13.9)	-1.46	.14	0.87	Large -	4 (2)	1 (1)
Scales	SRP Hyperactivity	52.00 (7.66)	51.25 (9.64)	.000	1.00	0.16	Very small-	0 (1)	0 (0)
	SRP Attention Problems	56.25 (14.45)	52.75 (11.32)	-0.54	.593	0.39	Small -	0 (1)	1 (0)
	PRS Hyperactivity	61.40 (10.50)	56.80 (11.45)	-1.21	.225	0.51	Medium -	0 (1)	1 (1)
	PRS Aggression	62.60 (9.61)	56.60 (12.82)	-1.63	.104	0.82	Large -	2 (1)	1 (1)
	PRS Conduct Problems	54.40 (3.65)	48.80 (7.60)	-1.84	.066	1.18	Large -	1 (0)	0 (0)

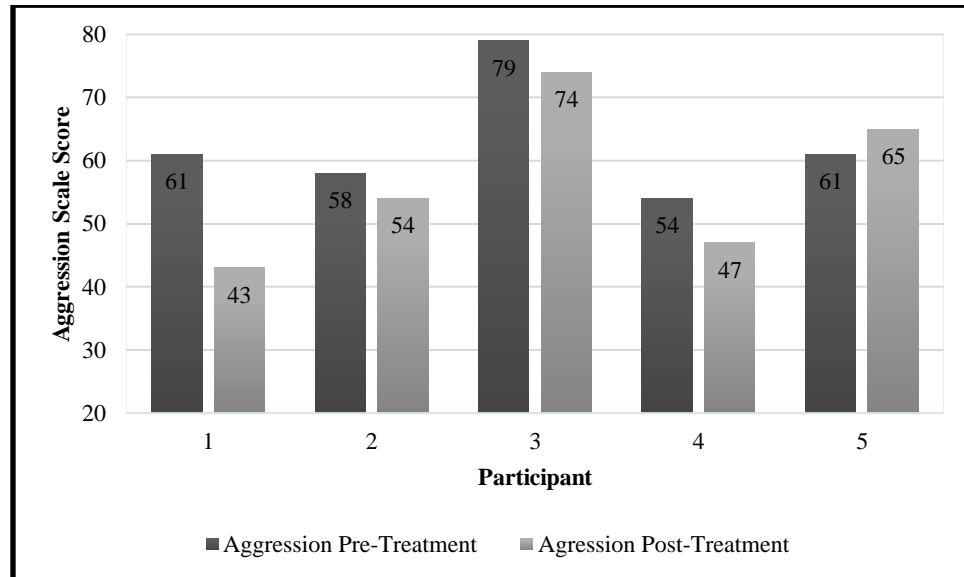
*Note:* BASC-2 scores are standardized so that the normal score is set at 50 with a standard deviation of 10 points. SRP scores are based off of four participants, PRS scores are based off of five participants, due to age restrictions of assessments.

Table 3.  
*Pre- and post-assessment means, standard deviations, and effect size of the BASC-2, Relationship Quality and Self-Perception Scale scores of the Self Report of Personality (SRP).*

Variable	Assessment	Pre-M (SD)	Post M (SD)	z-score	Sig. (2 tail)	Cohen's <i>d</i>	Effect size & Direction	# of "At-Risk" Participants Pre- Tx (Post- Treatment)	# of "Clinical" Participants Pre- Tx (Post- Treatment)
Relationship Quality Scales	SRP Relationship with Parents	49.25 (5.74)	51.25 (5.91)	-0.37	.713	0.23	Small +	0 (0)	0 (0)
	SRP Interpersonal Relations	47.25 (5.74)	54.25 (7.14)	-1.60	.109	1.06	Large +	0 (0)	0 (0)
Self- Perception Scales	SRP Self-Esteem	33.00 (8.52)	50.75 (11.44)	-1.83	.068	4.17	Large +	2 (1)	1 (0)
	SRP Self-Reliance	50.50 (9.47)	57.50 (3.11)	-1.46	.144	0.77	Medium +	0 (0)	0 (0)

*Note:* BASC-2 scores are standardized so that the normal score is set at 50 with a standard deviation of 10 points. SRP scores are based off of four participants due to age restrictions of the assessment measure.

Figure 1.



*Figure 1.* Individual participant scores on the PRS Aggression Scale pre-treatment and post-treatment.

**Appendix A**

# Direct Behavior Frequency Record

Participant #:	Target Behavior:
Observer's relation to child:	
Week beginning with date:	

Directions: Each day of the week complete the date and hours of observation. If/when the specific target behavior is observed mark a discreet tally mark in the corresponding box to the right of the date and hours of observation. Return the Behavior Observation Record to the group session each week.

Date:		Date:	
Hours of observation:		Hours of observation:	
Date:		Date:	
Hours of observation:		Hours of observation:	
Date:		Date:	
Hours of observation:		Hours of observation:	
Date:		Date:	
Hours of observation:		Hours of observation:	
Date:			
Hours of observation:			

### Appendix B

Session	Elements	Intentions	Home Practice
Introduction	<ul style="list-style-type: none"> <li>• Rational for course and research.</li> <li>• Commitment</li> <li>• Questions</li> </ul>	<ul style="list-style-type: none"> <li>• Review the rational for offering MBSR to children.</li> <li>• Discuss course structure and time commitment.</li> <li>• Answer questions.</li> </ul>	
Class 1	<ul style="list-style-type: none"> <li>• Mindful listening (tone bar)</li> <li>• Introduction to mindfulness</li> <li>• Group agreements and class guidelines</li> <li>• Mindful eating &amp; discussion</li> <li>• Breath-based practice &amp; discussion: Jewel</li> <li>• Introduction to Still</li> <li>• Quiet Place</li> <li>• Define mindfulness-paying attention, here and now, with kindness and curiosity, and then choosing our behavior</li> <li>• Daily life practice-mindful tooth brushing</li> <li>• Closing mindful listening</li> </ul>	<ul style="list-style-type: none"> <li>• Create a safe, welcoming environment</li> <li>• Introduce participants to each other and to the Still</li> <li>• Quiet Place/mindfulness</li> <li>• Provide an experience and working definition of Still</li> <li>• Quiet Place/mindfulness</li> <li>• Give examples of mindfulness in daily life (informal practice)</li> </ul>	<ul style="list-style-type: none"> <li>• Jewel</li> <li>• Tooth brushing</li> </ul>
Class 2	<ul style="list-style-type: none"> <li>• Mindful listening &amp; eating</li> <li>• Review class 1 and experience with home practice, discuss barriers to practice, generate solutions</li> <li>• Seaweed movement practice</li> <li>• Jewel</li> <li>• Pleasant Events exercise &amp; discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Explore experience of daily life practice</li> <li>• Support the children in establishing a daily practice</li> </ul>	<ul style="list-style-type: none"> <li>• Jewel</li> <li>• Shoe tying</li> </ul>



	<ul style="list-style-type: none"> <li>• Investigate how often our attention is in the past or the future</li> <li>• Daily life practice-mindful shoe tying</li> <li>• Answer questions</li> <li>• Overview and encourage home practice</li> <li>• Mindful listening</li> </ul>		
Break week			
Class 3	<ul style="list-style-type: none"> <li>• Mindful listening &amp; eating</li> <li>• Review class 2 and experience with home practice</li> <li>• Action Circle movement practice</li> <li>• Bubbles/Thought Watching</li> <li>• Introduce concept of Unkind Mind (critical internal dialogue)</li> <li>• Nine dots</li> <li>• Overview of home practice</li> <li>• Mindful listening</li> </ul>	<ul style="list-style-type: none"> <li>• Discuss experience of daily life practice</li> <li>• Cultivate capacity to observe thoughts</li> <li>• Nine dots</li> <li>• Perception-how we view ourselves, others</li> <li>• Thoughts during a difficult task</li> <li>• Introduce concept of Unkind Mind (critical internal dialogue)</li> </ul>	<ul style="list-style-type: none"> <li>• Bubbles/Thought Watching</li> <li>• Notice Unkind Mind</li> </ul>
Class 4	<ul style="list-style-type: none"> <li>• Mindful listening &amp; eating</li> <li>• Review class 3 and experience with home practice</li> <li>• Unpleasant Event exercise</li> <li>• Suffering = Pain x</li> <li>• Resistance</li> <li>• Mindful Dance Party</li> <li>• Finger Yoga practice</li> </ul>	<ul style="list-style-type: none"> <li>• Examine the thoughts and feelings associated with unpleasant experiences</li> <li>• Resistance</li> <li>• Wanting things to be different</li> <li>• Examine how resistance/wanting circumstances, ourselves,</li> </ul>	<ul style="list-style-type: none"> <li>• Feelings</li> <li>• Haiku/poetry/art depicting a feeling</li> <li>• Play with <math>S = P \times R</math></li> <li>• Watch how we create suffering</li> <li>• Showering</li> </ul>

	<ul style="list-style-type: none"> <li>• Mindfulness of feelings &amp; haiku or drawing</li> <li>• Discuss that this is the halfway point in the course and a new moment to recommit to the practices</li> <li>• Daily life practice – mindful showering</li> <li>• Mindful listening</li> </ul>	<p>others to be different creates upset/suffering</p> <ul style="list-style-type: none"> <li>• Develop emotional fluency</li> </ul>	
Class 5	<ul style="list-style-type: none"> <li>• Mindful listening &amp; eating</li> <li>• Review class 4 and experience with home practice</li> <li>• Emotion theory and Improvisation</li> <li>• Suffering = Pain + Resistance</li> <li>• Yoga</li> <li>• Holes and different street</li> <li>• Autobiography in Five Short Chapters read &amp; worksheet</li> <li>• Mindful listening</li> </ul>	<ul style="list-style-type: none"> <li>• Introduce basic emotion theory</li> <li>• Explore common “holes” and “different streets”</li> <li>• Use holes and streets to discuss reacting vs. responding</li> <li>• Yoga</li> <li>• Self-talk/Self-compassion</li> <li>• Balance as dynamic</li> <li>• Explore how often Unkind Mind is inaccurate/negative/looking for trouble</li> </ul>	<ul style="list-style-type: none"> <li>• Mountain/Stretch and Balance</li> <li>• Notice “holes” and “different streets”</li> <li>• Continue to notice Unkind Mind</li> </ul>
Class 6	<ul style="list-style-type: none"> <li>• Mindful listening &amp; eating</li> <li>• Review class 5 and experience with home practice, discuss falling in and staying out of holes</li> <li>• Body Scan</li> <li>• Difficult Communication</li> <li>• Mindful walking</li> </ul>	<ul style="list-style-type: none"> <li>• Continue developing the capacity to respond rather than react</li> <li>• Bring attention into the body</li> <li>• Enhance capacity to observe thoughts and feelings</li> </ul>	<ul style="list-style-type: none"> <li>• Alternate Body Scan/Being in the body, and Walking</li> <li>• Thoreau/nature walk</li> <li>• Practicing responding (with Kind Heart) to both Unkind Mind and in difficult situations</li> </ul>

	<ul style="list-style-type: none"> <li>• Introduce possibility of Kind Heart as an antidote to Unkind</li> <li>• Mind</li> <li>• Overview of home practice</li> <li>• Mindful listening</li> </ul>	<ul style="list-style-type: none"> <li>• Practice using mindfulness during difficult communications</li> <li>• Moving our practice into the world</li> <li>• Introduce Kind Heart</li> </ul>	
Class 7	<ul style="list-style-type: none"> <li>• Mindful listening</li> <li>• Mindful eating</li> <li>• Mindful breathing (participant lead)</li> <li>• Review class 6 and experience with home practice</li> <li>• Share examples of responding to situations when the students reacted</li> <li>• Making rain</li> <li>• Mindful Aikido</li> <li>• Loving-kindness STAR practice</li> <li>• Discuss that next week is the last week of class</li> <li>• Request that students bring something for the class that symbolizes their experience with the course</li> <li>• Home practice overview</li> <li>• Mindful listening</li> </ul>	<ul style="list-style-type: none"> <li>• Continue to develop the capacity to respond (with Kind Heart) rather than react</li> <li>• Introduce loving-kindness as a specific practice for developing Kind Heart</li> </ul>	<ul style="list-style-type: none"> <li>• Loving-kindness</li> <li>• Continue responding (with Kind Heart) to both Unkind Mind and in difficult situations</li> <li>• Bring something symbolic to share for the last class</li> </ul>
Class 8	<ul style="list-style-type: none"> <li>• Mindful listening</li> <li>• Mindful eating</li> <li>• Review class 7 and experience with home practice</li> <li>• Group choice</li> </ul>	<ul style="list-style-type: none"> <li>• Discuss the natural capacity to send and receive love</li> <li>• Share what the course has meant to them</li> </ul>	<ul style="list-style-type: none"> <li>• Your choice</li> <li>• Sit/Flashlight</li> <li>• Make a commitment (or not) as to how you</li> </ul>

	<ul style="list-style-type: none"> <li>• Letter to a friend</li> <li>• Sharing symbol</li> <li>• Completion/beginning</li> <li>• Making the practice their own</li> <li>• Mindful listening</li> </ul>	<ul style="list-style-type: none"> <li>• Discuss variety of ways they can make the practice their own</li> <li>• Discuss the completion of the course</li> <li>• Remind them they can always call or e-mail</li> </ul>	<p>will continue daily life practice</p>
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