MODIFIED CORE MINDFULNESS SKILLS TRAINING
IN AN ADOLESCENT FEMALE CORRECTIONAL SAMPLE

by

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A DISSERTATION

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ABSTRACT

Dialectical Behavior Therapy’s Core Mindfulness skills have the potential to help incarcerated adolescents reduce diverse symptoms of psychopathology. Due to the current lack of research on the independent effect of the Core Mindfulness skills, two studies were performed to examine the effectiveness of a modified Core Mindfulness skills training program in reducing symptoms of depression, anxiety, anger, and suicidal ideation in a sample of incarcerated adolescent females (“students”). In Study 1, eight students completed five self-report measures at three time points. The first two assessments were conducted prior to the treatment, and the third assessment was collected upon completion of the treatment. A series of analyses of variance (ANOVAs) revealed no significant changes in the outcome variables, although there was a slight trend of decreasing scores in the hypothesized direction.

In Study 2, 38 students completed two self-report measures prior to and upon completion of the modified Core Mindfulness skills training program, and they provided feedback about the treatment. Additionally, staff members provided behavioral ratings, and group leaders and co-leaders provided feedback about the overarching modified DBT program. Multivariate analyses of variance (MANOVAs), ANOVAs, and Friedman tests revealed significant reductions in student-reported levels of depression, anxiety, and suicidal ideation. There were no significant changes in staff ratings of student behavior. Limitations and contributions of the study are discussed, as well as barriers to successful implementation of treatment research in a correctional facility. Recommendations to improve treatment implementation in secure settings, and suggestions for future research are offered.
DEDICATION

This dissertation is dedicated to the professionals who worked tirelessly to implement this comprehensive treatment.
### LIST OF ABBREVIATIONS AND SYMBOLS

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
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<tbody>
<tr>
<td>α</td>
<td>Alpha: the probability of making a Type I error</td>
</tr>
<tr>
<td>AARS</td>
<td>Adolescent Anger Rating Scale</td>
</tr>
<tr>
<td>ANCOVA</td>
<td>Analysis of covariance</td>
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<tr>
<td>ANOVA</td>
<td>Analysis of variance</td>
</tr>
<tr>
<td>BASC-2</td>
<td>Behavior Assessment System for Children, Second Edition</td>
</tr>
<tr>
<td>BPD</td>
<td>Borderline personality disorder</td>
</tr>
<tr>
<td>df</td>
<td>Degrees of freedom</td>
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<tr>
<td>DBT</td>
<td>Dialectical behavior therapy</td>
</tr>
<tr>
<td>$F$</td>
<td>$F$ distribution</td>
</tr>
<tr>
<td>GLM</td>
<td>Generalized linear model</td>
</tr>
<tr>
<td>ISO-30</td>
<td>Inventory of Suicide Orientation-30</td>
</tr>
<tr>
<td>Λ</td>
<td>Lambda: Wilks’ multivariate test criterion</td>
</tr>
<tr>
<td>$M$</td>
<td>Sample mean, arithmetic average</td>
</tr>
<tr>
<td>MANCOVA</td>
<td>Multivariate analysis of covariance</td>
</tr>
<tr>
<td>MANOVA</td>
<td>Multivariate analysis of variance</td>
</tr>
<tr>
<td>MAPs for ADHD</td>
<td>Mindful Awareness Practices for Attention-Deficit/Hyperactivity Disorder</td>
</tr>
<tr>
<td>MASC</td>
<td>Multidimensional Anxiety Scale for Children</td>
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<tr>
<td>MBCT</td>
<td>Mindfulness-based cognitive therapy</td>
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<tr>
<td>MBSR</td>
<td>Mindfulness-based stress reduction</td>
</tr>
<tr>
<td>$Mdn$</td>
<td>Median</td>
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</table>
\( n \)  
Number of cases in a subsample

\( N \)  
Total number of cases

\( \eta^2_p \)  
Partial eta squared effect size estimate

\( p \)  
Probability value

PRS-A  
Parent Rating Scales – Adolescent (of the BASC-2)

RADS-2  
Reynolds Adolescent Depression Scale, Second Edition

RCT  
Randomized clinical trial

\( SD \)  
Standard deviation

SRP-A  
Self-Report of Personality – Adolescent (of the BASC-2)

\( t \)  
Sample value of the \( t \)-test statistic

TAU  
Treatment-as-usual

\( \chi^2 \)  
Chi-square test statistic

YSI  
Youth Services Institute

\( Z \)  
Wilcoxon signed-rank test statistic

\( = \)  
Equal to
ACKNOWLEDGMENTS

I am very fortunate to have had the guidance, support, and care of many individuals throughout graduate school and over the course of this dissertation, and I am pleased to have the opportunity to acknowledge them. My advisor, Karen Salekin, has been intimately involved in this study since its inception in January 2007. I am very thankful to her for all of her insight, motivation, and encouragement, which have helped me grow professionally and personally over these past several years. I am also very fortunate to have a supportive and collaborative committee who helped me to manage the pitfalls of clinical research with some semblance of sanity. I am extremely grateful to John Lochman, Forrest Scogin, Steve Thoma, and Tom Ward for all of their comments, suggestions, questions, insight, and support over the course of this study.

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CHAPTER 1
INTRODUCTION

Within the past 30 years, mindfulness has transitioned from a relatively unknown practice in Western culture to an essential component within a variety of mental health treatments (Baer, 2003). Mindfulness can be described as “paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally (Kabat-Zinn, 1994, p. 4). Through this approach, one can “[nurture] greater awareness, clarity, and acceptance of present-moment reality” (Kabat-Zinn, 1994, p. 4). Mindfulness is an ongoing practice in which one attends to the present moment, for even a brief period, which interrupts previous behavior patterns of automatic, reactive responses (Kabat-Zinn, 1994). Through mindfulness practice, one can approach familiar situations with a new sense of clarity, which may ultimately contribute to overall satisfaction and happiness. This focus on the present is not necessarily easy to accomplish, but it potentially can yield numerous benefits, such as experience and appreciation of a range of emotions, enhancement of creativity, and escape from past automatic response tendencies (Kabat-Zinn, 1994).

The ability to interrupt automaticity is crucial in behavioral and cognitive-behavioral interventions; therefore, it is not surprising that mindfulness practice has been utilized within the framework of a variety of therapeutic approaches. Mindfulness practice is a primary component in several current mental health treatments, including mindfulness-based stress reduction (MBSR), mindfulness-based cognitive therapy (MBCT), Meditation on the Soles of the Feet, Mindful Awareness Practices (MAPs) for Attention-Deficit/Hyperactivity Disorder (ADHD), and dialectical behavior therapy (DBT). These mindfulness-based treatments have been
developed for a variety of patients with diverse mental health problems. A review of the literature demonstrates that the incorporation of mindfulness practice in several current interventions has been effective in reducing symptoms related to depression, anxiety, anger, and suicidal ideation.

Of these mental health problems, the need to address suicidal ideation is currently paramount, particularly among adolescents. Centers for Disease Control and Prevention (CDC) statistics revealed that suicide rates for 10-24 year olds significantly increased between 2003 and 2004, with the largest rate increases occurring among 10-14 and 15-19 year-old females (CDC, 2007). Additionally, rates of hanging/suffocation significantly increased among 10-19 year-old females, which consequently replaced firearms as this population’s most frequently used means of suicide (CDC, 2007). Due to the increasing suicide rates and increased use of easily accessible methods, the CDC recommended that suicide prevention programs “address the underlying reasons for suicide” (CDC, 2007). Of further concern are findings that incarceration is a significant risk factor for adolescent suicidal behavior (Spirito & Esposito-Smythers, 2006) and, that incarcerated adolescents have yielded higher suicide attempt rates compared to community samples (Penn, Esposito, Schaeffer, Fritz, & Spirito, 2003). In fact, the researchers found that, within a sample of almost 300 incarcerated adolescents, approximately 12% endorsed a prior suicide attempt, and almost 60% of these attempts consisted of violent methods (i.e., cutting, stabbing, and hanging/choking; Penn et al., 2003). Thus, the exploration of a treatment that directly addresses suicidality in incarcerated youth is warranted and, considering recent trends among adolescent females, treatment seems particularly needed for this population. As such, this study aims to examine the effect of mindfulness skills training in reducing symptoms associated
with common mental health problems (i.e., depression, anxiety, anger, aggression, and suicidal ideation) in a sample of incarcerated adolescent females.

**Effects of Mindfulness-Based Treatments on Psychopathology and Related Behaviors**

As previously stated, mindfulness-based treatments are diverse in terms of their targeted problems and intended patients. A description of some of these treatments and the problems they have addressed is provided as follows.

**Depression and anxiety.** Perhaps one of the more frequently researched mindfulness-based treatments, mindfulness-based cognitive therapy (MBCT) was specifically developed to teach mindfulness skills to patients with remitted depression (Teasdale, Segal, & Williams, 1995). According to the researchers, if patients learn these skills while euthymic, they will be better prepared to accept and manage future mild depressive symptoms, and prevent potential relapse into a depressive episode (Teasdale et al., 1995). Due to the frequent co-occurrence of anxious and depressive symptoms (American Psychiatric Association [APA], 2000), it is not surprising that this treatment has been found to effectively reduce both types of symptoms. For instance, in one study, 51 participants who were documented to have treatment-resistant depression participated in an eight-week MBCT group and completed pre- and post-treatment assessments. Upon completion of the program, these individuals displayed significantly lower levels of depression and anxiety, and reduced depression was associated with increased mindfulness (Eisendrath, Delucchi, Bitner, Fenimore, Smit, & McLane, 2008). In fact, even participants who were severely depressed, as evidenced by higher scores on the Beck Depression Inventory-II (BDI-II), yielded larger decreases during the post-treatment assessment than those with milder forms of depression (Eisendrath et al., 2008). Notably, female participants displayed significantly more improvement in depression ratings than male participants (Eisendrath et al.,
One limitation of this study is the potential confounding effect of antidepressant treatment during participation in the MBCT groups, as all of the participants took psychotropic medication, which may have accounted for the reductions in negative mood states (Eisendrath et al., 2008). However, another study supported the effects of MBCT in preventing subsequent depressive relapse among participants who had at least three prior depressive episodes, independent of psychotropic medication (Teasdale, Segal, Williams, Ridgeway, Soulsby, & Lau, 2000). These results suggest that even patients who take psychotropic medications can benefit from this mindfulness-based treatment.

Additional research has found that participation in an eight-week MBCT group significantly reduced depressive and anxious symptoms among remitted bipolar patients who had histories of suicidal ideation and/or behavior, in comparison to a waitlist control group (Williams, Alatiq, Crane, Barnhofer, Fennell, Duggan et al., 2008). Interestingly, the unipolar depressed participants in this study also reported decreased levels of depression from pre- to post-assessment, but they yielded non-significant changes in anxiety ratings. The authors noted that co-morbid anxiety is associated with increased risk for suicide among bipolar patients (Williams et al., 2008). Thus, MBCT seems particularly useful in improving the lives of patients with bipolar disorder because it can significantly reduce both depressive and anxious symptoms, and has the potential to ward off future suicidal ideation or behavior.

Research also suggests mindfulness-based treatments can initiate potentially long-lasting symptom reduction in anxiety and depression. For example, Miller and colleagues (1995) revealed that reductions in self-reported symptoms of anxiety and depression were maintained over a three-year period following the completion of an eight-week mindfulness meditation-based stress reduction program. When one considers the severity of the participants’ anxiety (i.e.,
participants were diagnosed with Generalized Anxiety Disorder or Panic Disorder with or without Agoraphobia) and the brief duration of the treatment (i.e., eight weeks), the possible long-term therapeutic benefits and cost-effectiveness of mindfulness-based treatment for anxiety patients are even more remarkable.

Of note, the research discussed thus far has been limited to adult samples. However, mindfulness-based treatments have also been utilized with adolescents. For instance, mindfulness meditation via MAPs for ADHD has been implemented with both adult and adolescent populations (Zylowska, Ackerman, Yang, Futrell, Horton, Hale et al., 2008). Researchers found that participation in MAPs yielded statistically significant reductions in anxious and depressive symptoms in adults (Zylowska et al., 2008). Furthermore, attention difficulties associated with ADHD, such as conflict attention and set-shifting, were particularly improved by mindfulness training (Zylowska et al., 2008). Unfortunately, the small sample of adolescent participants ($N = 7$) prevented statistical examination of their pre-post assessment scores (Zylowska et al., 2008).

Fortunately, other research with adolescents has offered empirical support for the use of mindfulness-based treatments with this population. In a study conducted by Biegel and colleagues (2009), outpatient psychiatric adolescent patients in an MBSR program displayed significantly reduced depressive and anxious symptoms, in comparison to treatment as usual. Moreover, researchers have adapted DBT, for which mindfulness is a core underlying component, to address various emotional and behavioral problems in adolescents. Studies have found significant reductions in depression among adolescents who met criteria for bipolar disorder (Goldstein, Axelson, Birmaher, & Brent, 2007) and Oppositional Defiant Disorder (ODD; Nelson-Gray, et al., 2006). Unfortunately, the independent effect of the mindfulness
aspect of this treatment cannot be determined from these studies because analyses were conducted on the entire DBT program, of which mindfulness is only one component.

Mindfulness-based treatments have also yielded improvements in depression and anxiety among special populations, such as incarcerated offenders. In a quasi-experimental study, 1,350 male and female inmates housed in drug units of six correctional facilities participated in MBSR programs for 6-8 weeks over a four-year period (Samuelson, Carmody, Kabat-Zinn, & Bratt, 2007). Upon completion of this program, inmates displayed significantly lower levels of self-reported mood disturbance (based on depression, anxiety, and anger subscales) and hostility (Samuelson et al., 2007). Notably, female inmates displayed greater change percentages than male inmates, which suggests considerable applicability for MBSR with this population (Samuelson et al., 2007).

**Anger and aggression.** In addition to depression and anxiety, anger appears to benefit from mindfulness-based treatments. In his seminal text on mindfulness, Kabat-Zinn (1994) discusses the effects mindfulness practice can have on anger (e.g., pg 77). The author argues, “[w]ithout care and awareness, small-minded feeling states can dominate the moment” and he describes how individuals, particularly when they are angry, are less mindful when they become preoccupied with being “right” (Kabat-Zinn, 1994, p. 242). Yet, through the continued practice of mindfulness, individuals can be prepared to maintain behaviors consistent with their long-term goals (e.g., being mindful), and refrain from being “lost or betrayed in the heat and reactivity of a particular moment” (Kabat-Zinn, 1994, p. 77). The author provides an analogy of how one’s awareness can hold anger, similar to how a pot can hold food. Through mindfulness, one can consciously respond to an incident with awareness and understanding of the entire situation, rather than via impulsive, automatic reactions (Kabat-Zinn, 1994).
Traditionally, anger problems have been treated via cognitive-behavioral techniques, which have consisted of exposure to provocation, cognitive change, self-regulation, and relaxation (Wright, Day, & Howells, 2009). However, in their review of the literature, Wright and colleagues (2009) found empirical support for the use of mindfulness-based interventions to reduce anger. In particular, through the application of mindfulness techniques, individuals learn to experience events and behaviors in a nonjudgmental manner (Wright et al., 2009), and they improve their ability to experience angry feelings without verbal or physical reactions. In one study, a small sample ($N = 6$) of adult male offenders who had mild intellectual disabilities were taught *Meditation on the Soles of the Feet* to address their aggressive behavior (Singh, Lancioni, Winton, Singh, Adkins, & Singh, 2008). Over the course of this 27-month program, acts of physical aggression decreased to zero for each participant for at least the last six months of the training (Singh et al., 2008). Moreover, the physically aggressive incidents that occurred during the training did not require emergency medication or physical restraints, and did not result in either staff or peer injuries, which is in stark contrast to incidents prior to the implementation of this mindfulness-based treatment (Singh et al., 2008).

Perhaps the most telling evidence of change in this study is a comparison of pre- and post-treatment effects. Specifically, during the 12 months prior to the *Meditation on the Soles of the Feet* training, various staff members were absent for 315 days related to injuries from these six participants. During the 12 months post-treatment, the participants’ physical aggression resulted in merely 15 days of staff absence (Singh et al., 2008). Furthermore, the costs associated with staff injuries (e.g., wages, worker’s compensation, and medical costs) from the six participants reduced from $52,590 during the 12 months preceding treatment to $2,244 during the 12 months following treatment (Singh et al., 2008). Such drastic change suggests a
mindfulness-based treatment (1) can be successfully implemented with individuals who have mild intellectual abilities, and (2) has the potential to substantially reduce costs associated with staff injury.

Several of these same researchers also taught *Meditation on the Soles of the Feet* to three, seventh-grade adolescents (two males, one female) who were diagnosed with conduct disorder (Singh, Lancioni, Singh Joy, Winton, Sabaawi, Wahler, & Singh, 2007). Each adolescent had tested intelligence scores in the average range, and was referred to treatment due to repetitive aggressive behaviors at school, which placed him or her at risk for expulsion. Participants received a four-week training in which they met individually with a therapist for 15 minutes, three times per week, to learn *Meditation on the Soles of the Feet* (Singh et al, 2007). Then, participants practiced the skills on their own for a 25-week period, during which they met with the therapist monthly for approximately 15 minutes. According to follow-up data from the year subsequent to the mindfulness training and practice periods, the participants’ aggressive and bullying behaviors decreased, but did not dissipate completely, such that they graduated the eighth grade without any more threats of expulsion (Singh et al., 2007).

It should be noted that the relationship between mindfulness and anger has not been consistently supported in the literature. For instance, one study sought to demonstrate the relation between mindfulness meditation and anger via an experimental manipulation (Griffin, 2001). The author found that listening to a 20-minute mindfulness meditation audiocassette did not significantly reduce self-reported anger subsequent to an anger-provoking situation (Griffin, 2001). Methodological factors, such as the limited exposure to the mindfulness meditation, and the time of day in which data were collected, likely influenced the study’s findings (Griffin, 2001), which is consistent with expert recommendations to practice mindfulness meditation.
repeatedly in order to reap its benefits (Kabat-Zinn, 1994). Although participants did not display a significant reduction in anger, the results indicated that mindful awareness (one of four components of trait mindfulness) accounted for a significant amount of the variance in participant total anger scores, thereby indicating a relation between these two traits. These findings suggest that further exploration of the relation between anger and mindfulness interventions appears warranted.

**Effects of Mindfulness-Based Treatments on Suicidal Ideation**

In addition to reducing depression, anxiety, and anger, mindfulness-based treatments can also help reduce suicidal ideation. The majority of research that supports the use of mindfulness techniques to target suicidality stems from studies examining the effects of Dialectical Behavior Therapy (DBT). Given its structural and philosophical importance to the current study, a detailed description of DBT, including the role of mindfulness within this treatment, is provided below, followed by a description of empirical studies that support the use of DBT to reduce suicidal ideation and parasuicidal behavior.

**Dialectical behavior therapy.** DBT is a form of cognitive-behavioral therapy that was developed to reduce suicidal and self-harm, or “parasuicidal” behaviors in adult women diagnosed with Borderline Personality Disorder (BPD). This comprehensive therapy consists of hierarchical stages of treatment in which self-harm and suicide attempts are prioritized (Linehan, 1993a, b). Once the client stops engaging in parasuicidal behaviors, the focus of the treatment proceeds down the hierarchy, thereby addressing therapy-interference behaviors, quality-of-life-interference behaviors, and skills acquisition, in this order. DBT utilizes the process of dialectics to address treatment targets (Linehan 1993a, b), which is a means of achieving change through the integration of two seemingly contradictory beliefs. As such, DBT providers vacillate between
accepting the client for who she is and pushing her toward change (i.e., to reduce the frequency of self-harming behaviors and to increase the use of positive and adaptive behaviors; Linehan, 1993a, b).

DBT consists of four principle modalities: group skills training, individual psychotherapy, telephone consultation, and a therapist consultation team (Linehan, 1993a, b). Of primary concern in this study is the group skills training, in which participants are taught DBT skills to help them manage stressful situations in an effective manner, and to replace self-harming, and potentially life-threatening, behaviors (Linehan, 1993a, b). The group skills training sessions are lead by a primary group leader and a co-leader, both of whom have been trained in the core DBT skills. Handouts are used in session, and homework is regularly assigned and reviewed to ensure that participants practice the skills and receive constructive feedback. Additionally, between sessions, participants complete Diary Cards on which they record their use of the various skills, as well as corresponding thoughts, emotions, and behaviors.

There are four classifications of skills, or “modules,” that are taught in the DBT group skills training sessions (Linehan 1993a, b). The first module, Core Mindfulness, directly pertains to this study. In this module, participants learn how to balance emotional and logical thinking, and become oriented to the meditative aspect of DBT. Participants learn about the different frames of mind they can experience (e.g., “reasonable mind” and “emotional mind”) and they are taught skills that emphasize balancing their raw emotions with rationalization, which ultimately enables them to achieve their “wise mind” (Linehan, 1993b). This balance is achieved by applying the “what” skills of observation, description, and participation, and the “how” skills of using a nonjudgmental stance, focusing on the moment, and being effective (Linehan, 1993b). Core mindfulness targets self-dysregulation (e.g., identity confusion and disconnection from the
self), and serves as a building block for the other skills modules. Descriptions of the skills that are taught in the Core Mindfulness module are provided in Appendix A. The remaining modules are Distress Tolerance, Interpersonal Effectiveness, and Emotion Regulation, which teach participants how to manage various stressors, interact with others in an effective manner, and accept and validate their emotions, respectively. All of these skills and methods on how to teach them are detailed in the *Skills Training Manual for Treating Borderline Personality Disorder* (Linehan, 1993b).

**Core mindfulness as the foundation of DBT.** Of the four DBT skills training modules, Core Mindfulness is essential to the treatment and can be conceptualized as its foundation (Linehan, 1993a; Wagner, Rathus, & Miller, 2006). The skills taught within this module help increase one’s self-awareness, maintain focus and presence in the moment, and draw individuals to their wise mind, which will help them make healthy decisions and ultimately reach their goals (Wagner et al., 2006). The Core Mindfulness skills are explicitly integrated into each of the other three skills training modules. For instance, Distress Tolerance skills involve the mindfulness components of nonjudgmental acceptance, and observation and description of one’s internal experiences (e.g., physiological reactions), thoughts, and feelings (Wagner et al., 2006). Interpersonal Effectiveness skills also incorporate a nonjudgmental stance, observation, and description, but specifically in consideration of one’s interactions with others and one’s reaction to this experience (Wagner et al., 2006). The Core Mindfulness skills of participation, doing one thing mindfully, and being effective also help individuals refrain from distractions, keep the objective of their interaction as their focal point, and do what is needed to meet that objective. Finally, Emotion Regulation skills utilize observation and description as one learns about one’s emotions and feelings, as well as how not to judge these feelings (Wagner et al., 2006).
In addition to their assimilation throughout each skills training module, Core Mindfulness skills are integrated throughout the other modalities of DBT. Individual therapy serves as an opportunity for clients to practice mindfulness skills, receive feedback on their use, and learn how these skills can be used in real-life situations (Wagner et al., 2006). Telephone consultation provides another opportunity for clients to hone their mindfulness skills. When a client telephones her therapist in a state of distress, the therapist engages her in a brief mindfulness activity, such as mindful breathing, to help the client focus so they can address the prompting event and/or source of her dysregulation (Wagner et al., 2006). Mindfulness activities are also used independently by DBT providers, specifically at the beginning of each consultation team meeting. This experience helps team members transition from therapists to colleagues, and it focuses their attention on the present moment (Wagner et al., 2006). During weekly consultation team meetings, DBT providers share and learn new mindfulness exercises, and offer their internal observations, as well as feedback on the exercise (Wagner et al., 2006). This interaction helps build a sense of community (Wagner et al., 2006), which is crucial for individuals who provide treatment to such a taxing population.

**Effects of DBT on parasuicidal behavior and suicidal ideation.** In the initial randomized clinical trial (RCT) of DBT (Linehan, Armstrong, Suarez, Allmon, & Heard, 1991), participants were matched (e.g., for parasuicidal behaviors and psychiatric hospitalizations) and randomly assigned to DBT or treatment-as-usual (TAU), such as individual therapy services offered within the community. The authors found that DBT participants engaged in significantly fewer parasuicidal behaviors in comparison to the control group (Linehan et al., 1991). Moreover, the parasuicidal behaviors that were committed by the DBT participants were not as medically severe as those committed by the control group. However, non-significant differences were
found between the DBT and control groups on measures of internal states, such as depression and suicidal ideation (Linehan et al., 1991). This finding seems logical in light of DBT’s emphasis on higher-order problems (e.g., self-harm behaviors) and the severity of these problems within this sample.

A follow-up study (Linehan, Heard, & Armstrong, 1993) of these participants found that members of the DBT group had lower rates of parasuicide and psychiatric hospitalizations in comparison to the control group one year after the treatment was completed. These individuals also displayed fewer, and less medically severe, acts of parasuicide, as well as shorter psychiatric hospitalizations during the follow-up period (Linehan et al., 1993). When compared to the control group, the DBT group also endorsed less anger and greater social adjustment following DBT treatment (Linehan et al., 1993).

More recently, Linehan and colleagues (2006) replicated the format of the initial RCT (Linehan et al., 1991). However, in this study the TAU control group received non-behavioral (i.e., predominantly psychodynamic) psychotherapy from community practitioners who were deemed to be experts in their field. Comparing these two classifications of treatment, participants who received DBT had fewer suicide attempts, psychiatric hospitalizations, and emergency room visits (Linehan et al., 2006). Additional RCT research conducted by Linehan and colleagues has continued to provide support for the significant effects of DBT over TAU, even with regard to ratings of internal states, such as anger, and self-rated social adjustment (Linehan, Tutek, Heard, & Armstrong, 1994).

Research conducted by other investigators has yielded consistent findings with that of Linehan and colleagues. For instance, in an RCT that randomly assigned female veterans with BPD to DBT or TAU, the DBT group was found to display reductions in parasuicidal behavior

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and suicidal ideation, as well as self-reported feelings of anger, hopelessness, depression, and dissociation, after six months of treatment (Koons, Robins, Tweed, Lynch, Gonzalez, Morse, et al., 2001). In another study, DBT participants provided qualitative feedback and described this treatment as “life-saving” (Perseius, Öjehagen, Ekdahl, Åsberg, & Samuelsson, 2003). These individuals elaborated that DBT taught them skills to manage their suicidal and self-harm ideation, and that it helped them to accept themselves and others. In turn, DBT therapists rated DBT as improving client lives by decreasing suicidal and self-harm ideation, and increasing social functioning (Perseius, et al., 2003).

Although DBT has been shown to effectively reduce suicidal and parasuicidal behaviors in adult females with BPD, there is limited, yet growing, information and research about the effectiveness of this therapeutic approach with adolescents. Currently DBT is being implemented in outpatient and residential facilities for adolescents to treat suicidal and self-injurious behaviors, as well as substance abuse and other behaviors that are considered detrimental to the development and quality of life of these youth. Research on outpatient DBT using a small sample \( (N = 10) \) of adolescents who met criteria for bipolar disorder found significant reductions in suicidality and self-harming behaviors, as well as emotional dysregulation and depression, following one year of DBT treatment (Goldstein et al., 2007). However, the small sample size and lack of a control group are illustrative of the preliminary nature of this research. Additional research from inpatient settings has found that hospitalized adolescents who received DBT training were less likely to engage in self-injurious behaviors and other behaviors that warranted institutional documentation (Katz, Cox, Gunasekara, & Miller, 2004).

At the time of writing, the use of DBT to treat adolescents is beginning to venture into adolescent correctional settings. Even though many of the adolescents involved within the justice
system exhibit problem behaviors that are ideal for targeting through DBT, such as self-harm behaviors, aggression, and oppositional defiance, at present there is very little research on the effectiveness of DBT with this population. To date, only one study has been conducted (Trupin, Stewart, Beach, & Boesky, 2002). In this study, incarcerated adolescent females who were considered to be mentally ill, and consequently who were housed in a mental health unit at the correctional facility, demonstrated a reduction in a composite rating of their parasuicidal behavior, aggressive behavior, and misbehavior in school (Trupin et al., 2002). Conversely, youth who were not mentally ill showed no change in composite ratings of aggression and misbehavior in school (Trupin et al., 2002). Clearly, more research needs to be conducted to determine the effectiveness that DBT has in improving psychological and behavioral problems, including suicidal ideation, with an adolescent correctional population.

Even more so, although multiple DBT studies have found significant reductions in suicidal and parasuicidal behaviors, the independent effects of Core Mindfulness skills training remains unknown. Williams and Swales (2004) note this lack of research, and argue the relation between suicidal behavior and depression justifies the examination of mindfulness approaches with suicidal patients. Specifically, as mindfulness is shown to prevent future depressive relapses (e.g., Miller et al., 1995), in turn it can prevent future suicidal behavior. In particular, mindfulness can affect ruminative thinking associated with depression and suicidality. For instance, it can help people notice when they are engaging in automatic, negative thinking, learn how to focus their attention on the task or situation at hand, and help them recognize their thoughts as just thoughts, rather than facts (Williams & Swales, 2004). Such present moment-focused tasks may be particularly helpful for incarcerated adolescents who may experience numerous frustrations and have difficulty managing their emotions.
Use and Perceptions of Core Mindfulness Skills

In order to effectively reduce target behaviors, clients must actually use the Core Mindfulness skills, and two studies provide some insight into client views about this component of DBT. First, Lindenboim and colleagues (2007) examined the use of DBT skills among 49 adult women who met criteria for BPD and displayed current suicidal behavior. Within this sample, Core Mindfulness and Distress Tolerance skills were practiced most frequently, per participant self-report on homework diary cards (Lindenboim, Comtois, & Linehan, 2007). Although the authors were surprised by the frequency with which mindfulness skills were used, the minimal time requirement to implement these skills, their integration throughout the other skills modules, and the frequency they were taught in this study likely contributed to their implementation during homework (Lindenboim et al., 2007).

Second, another study examined the effectiveness of a modified version of DBT using 27 adolescent outpatient clients who displayed recent parasuicidal behavior or suicidal ideation, and who displayed at least three diagnostic criteria of BPD (Miller, Wyman, Huppert, Glassman, & Rathus, 2000). Participants completed a 12-week program of weekly individual therapy, weekly multifamily skills training groups, and telephone coaching, as needed. These participants rated their perceptions of 19 DBT skills on a five-point Likert scale from “not at all helpful” to “extremely helpful” (Miller et al., 2000, p. 184). While all 19 skills were rated between moderately and extremely helpful, three of the four most helpful skills were taught in the Core Mindfulness module (i.e., Do what works, Observe, and Stay focused; Miller et al., 2000). This finding suggests Core Mindfulness skills may have substantial practical utility to help clients reduce emotional and behavioral problems, though more research is needed to make this determination.
Appropriateness of Mindfulness-Based Treatments for Adolescents

From a developmental perspective, mindfulness skills appear appropriate for adolescent use. Based on Piaget’s theory of cognitive development, adolescence marks the formal operations stage in which thought processes progress from concrete to abstract concepts (Crain, 2005). During this stage, adolescents learn to problem-solve by developing and testing hypotheses, and systematically thinking about all possible options (Crain, 2005). Their ability to think about abstract concepts enables them to consider and mentally develop idealistic ways of living, and reflects an egocentrism surrounding their thoughts and ideas (Crain, 2005), as well as feeling as though they are the center of attention (Wagner et al., 2006). The Core Mindfulness “what” skills of observe and describe are particularly useful in helping adolescents assess and evaluate events and situations, thereby enabling effective problem-solving. Additionally, the Core Mindfulness skill participation counteracts egocentrism by teaching adolescents to become involved in an activity without being subconscious about their appearance. The Core Mindfulness “how” skills are equally useful during this developmental stage because they teach adolescents not to judge others (which is increasingly likely due to their egocentrism), to engage in effective behaviors, rather than what they consider to be “right” (which can help monitor idealistic views), and to focus on the specific task at hand (which can assist with hypothetical problem-solving).

Likewise, Erikson’s stage theory identifies adolescence as a period of struggle between identity development and confusion about one’s role in the world (Crain, 2005). During this stage, youth form visions of themselves through identification with in-groups, and they strive to realize their personal values (Crain, 2005). Given the focus of Core Mindfulness skills on self-awareness, adolescents learn to observe and describe their internal feelings as they seek to
develop their identity, and they learn to participate fully in activities, which contributes to their group identification. Similarly, the “how” skills enable them to be aware of their judgment of others during their identify formation, be in the moment during identity-developing activities (e.g., participating in group events, such as parties), and engage in effective behaviors consistent with their developing value system.

As with any therapeutic approach, modifications are needed to account for the developmental differences between adolescents and adults. Recommended modifications for teaching mindfulness to adolescents include detailed explanations of reasons to practice mindfulness, as well as creating a variety of exercises using daily events (e.g., telephone texting) that can be practiced repeatedly (Thompson & Gauntlett-Gilbert, 2008). Diversity of exercises reduces boredom while repetition increases the likelihood clients will utilize these skills outside of group skills training. Moreover, metaphors that use age-appropriate, real-life examples, such as training a puppy to sit, also help clients understand the specific skills through vivid examples (Thompson & Gauntlett-Gilbert, 2008). In their text that describes the adaptation of DBT for use with suicidal adolescents, Miller, Rathus, and Linehan (2007) provide 30 mindfulness activities that have either been adapted or developed for use with adolescents. These activities reflect and illustrate how multiple skills (e.g., observe, describe, and nonjudgmental stance) can be incorporated within a single event. Additional modification suggestions for adolescents include shortened periods of mindfulness skills practice, caregiver involvement to promote modeling, and utilization of peer teaching and support during group skills training (Thompson & Gauntlett-Gilbert, 2008). Overall, these examples further demonstrate that mindfulness skills can be used with adolescents. Incorporation of these modifications increases the likelihood that clients will generalize their skills use to address common problems, such as arguments with parents or peers.
Mental Health Problems among Incarcerated Adolescent Females

Currently, there is limited research on the longitudinal progression of adolescent females’ mental health symptoms during their incarceration. Studies have shown that prevalence rates of various mental health problems, including depression, anxiety, anger, aggression, and suicidality, are not uncommon among adolescent females while they are incarcerated (Abrantes, Hoffman, & Anton, 2005; Arnold et al., 2003; Dixon, Howie, & Starling, 2005; Penn et al., 2003). However, there are few studies which address changes, if any, in these mood states and mental health problems during the weeks, months, or years these individuals are confined, without the benefit of a psychological or psychosocial intervention. In fact, such research is also limited within incarcerated adult populations, although some information can be gleaned from treatment studies. For instance, in the previously mentioned study of MBSR conducted within several adult correctional facilities, the quasi-waitlist control group did not experience significant changes in self-reported levels of hostility, self-esteem, or mood disturbance during the 6-8 week wait period (Samuelson et al., 2007). Findings such as this suggest individuals may experience minimal changes in mental health problems over the course of their incarceration. However, more longitudinal research is needed to develop conclusive findings.

Within the limited research available, this investigator located one study which examined longitudinal changes in depression in a sample of 36 adolescent Japanese females who were incarcerated in a detention center (Ariga et al., 2010). Participants completed self-report assessments on two occasions: within one month of their incarceration, and again one month prior to their release from the detention center (range: 310-380 days between the two assessments). Nine participants were identified as having severe mental health problems (e.g., depression and self-injury), and consequently received monthly treatment via medication,
supportive psychotherapy, and psycho-education (Ariga et al., 2010). Results revealed mean depression scores significantly decreased between the two time points for the nine participants who received treatment, as well as the 27 participants who did not receive mental health treatment (Ariga et al., 2010). This suggests the passage of time, rather than a psychological intervention, may have contributed to participants’ lower depression levels toward the end of their incarceration. Unfortunately, mid-point assessments were unavailable, and thus changes in depression ratings during the course of this 10-12 month period are unknown. The minimal availability of research documenting longitudinal changes in incarcerated youth’s mental health problems warrants further attention.

**Statement of the Problem**

Within the juvenile justice system, female correctional populations have traditionally been underserved in comparison to their male counterparts. However, their arrest rate has been rising (Office of Juvenile Justice and Delinquency Prevention, 1996), leading to increases in adjudication and detention. Moreover, adolescent females incarcerated in juvenile correctional facilities have frequently suffered from high rates of traumatic events, including sexual and physical abuse (Mason, Zimmerman, & Evans, 1998; Cauffman, Feldman, Waterman, & Steiner, 1998), and often they endorse high levels of subjective distress and numerous symptoms of posttraumatic stress disorder (Cauffman et al., 1998). Such severe emotional problems place adolescents at risk for developing various forms of psychopathology, as well as continued involvement in the legal system during their adult years.

Within the southeastern United States, there are several juvenile correctional facilities for female adolescents. According to previously collected intake assessments from one of these facilities, which were analyzed during the fall of 2007, suicidal ideation and previous suicide
attempts were common within this facility (endorsed by 50% and 33% of students, respectively).
Moreover, many of these adolescents endorsed histories of sexual abuse, mental health
diagnoses, and use of psychotropic medications. Some of the most common psychological
problems displayed by these adolescents were depression, anxiety, and anger. Even more so,
during their placement at this facility, numerous acting out behaviors were displayed on a regular
basis. These behaviors included fighting, blatant defiance, and intentional self-harm.

Prior treatments at this juvenile correctional facility have included psychoeducational
groups and workbooks, for instance to improve anger management and self-esteem. However,
there is a lack of evidence that these methods help reduce common problems, such as depression,
anxiety, anger, aggression, and suicidal ideation. Some therapy programs have yielded beneficial
results with adolescent offenders (e.g., multisystemic therapy), yet they require familial
involvement (Henggeler, Melton, Brondino, Scherer, & Hanley, 1997). Due to the centralized
location of this particular juvenile correctional facility, most of these adolescent female offenders
have been removed from their families by several hours, thereby precluding familial involvement
in on-site treatment. All in all, the characteristics of the adolescent female offenders at this
facility suggest a strong need for a comprehensive, behavioral treatment, such as DBT.

Given the promising impact that DBT offers for reducing psychological problems and
maladaptive behaviors in incarcerated adolescent females, the presiding state agency decided to
implement a modified DBT program at this juvenile correctional facility. To determine whether
or not this treatment benefitted the adolescents, the agency requested a treatment effectiveness
study be conducted on their implementation of DBT. Ideally, an RCT would be implemented in
which participants are randomly assigned to participate in either the modified DBT program or
TAU, namely, the treatment methods regularly used at the facility prior to the modified DBT
program. Such a design would enable a solid, scientific examination into the effectiveness of this new treatment. However, an RCT, although ideal, was not conducive to this setting. Due to the empirical support for DBT and their enthusiasm for this treatment, the administration determined that an RCT would withhold DBT from some students, which would conflict with its mission to provide consistent treatment to the youth in its care.

Following the decision that DBT would be a facility-wide treatment, this investigator collected three psychological assessments on eight participants to examine functioning prior to DBT (i.e., Baseline; May and June 2008), and following completion of the first module of the modified DBT program, Core Mindfulness (July 2008). Based upon this preliminary data, effective September 2008, this investigator designed and implemented a quasi-experimental study that examined the effectiveness of the juvenile correctional facility’s modified 16-week DBT program. During the course of data collection (September 2008 – August 2009), several staff- and participant-related complications arose. Specifically, four of the six intensively trained group leaders, including the Facility Psychologist, resigned from their positions with this agency, thereby leaving a shortage of treatment providers. Concomitantly, the census at the correctional facility reduced to abnormally low levels, resulting in fewer residents, and potential participants, than in previous years (i.e., low 30s vs. mid 50s). The low census was partially related to unexpected participant releases and transfers out of this facility, and it also contributed to delays in treatment implementation (e.g., a new group could not be started when only one participant was available). Additionally, low staffing contributed to unanticipated breaks in between treatment modules, particularly during holiday seasons. Consequently, the majority of adolescents who consented to participate in the 16-week study were released prior to completion of the entire modified DBT program.
Although these unexpected complications precluded attainment of the needed sample size to assess the 16-week treatment, they afforded a new opportunity to examine the independent effect of the Core Mindfulness component of DBT on various mental health problems, which has been lacking in prior research (Baer, 2003; Williams & Swales, 2004). As such, this dissertation was conducted to examine changes in self-reported and caregiver-reported ratings of depression, anxiety, anger, aggression, and suicidal ideation following participation in a modified, four-week Core Mindfulness skills training group. Notably, previous research (e.g., Samuelson et al., 2007) has indicated that mindfulness-based intervention groups are feasible and effective in correctional settings, and reductions in mood disturbance and hostility can be obtained, at least in the short-term, in a traditionally negative and harsh environment, such as a correctional facility. This study expanded upon past research to determine the applicability of these findings with incarcerated adolescent females. Furthermore, this study lent insight into the sole benefits of Core Mindfulness skills training, independent of the other three skills training modules.

**Primary Hypotheses**

This dissertation consisted of two studies designed to examine the effect of Core Mindfulness skills training on a set of psychological variables. The specific studies and corresponding hypotheses are detailed as follows.

**Study 1.** Study 1 was an exploratory study that consisted of a repeated measures, pre-post design in which student ratings were measured across three time points. Specifically, eight adolescent females who were incarcerated at this juvenile correctional facility completed a battery of five measures of psychological functioning (see the Measures [Core Mindfulness Battery] section of this document on page 48 in May 2008 (Baseline 1), and four weeks later in June 2008 (Baseline 2). These two assessments reflected participants’ baseline level of
functioning. Next, these individuals participated in a four-week Core Mindfulness group. Upon completion of this group, in July 2008, approximately four weeks after the second baseline assessment, the participants completed the same assessment battery to monitor their psychological functioning (Core Mindfulness assessment). Thus, Study 1 examined changes in self-report ratings across these three time points. Based upon research conducted to date, it was expected that participation in the Core Mindfulness module of a modified DBT skills training program would result in significant reductions in:

1. depression, based upon the Depression Total Scale $T$ score of the *Reynolds Adolescent Depression Scale, Second Edition* (RADS-2), and the Depression scale $T$ score of the self-report version of the *Behavior Assessment System for Children, Second Edition* (BASC-2);

2. anxiety, as indicated by the Total Anxiety Scale $T$ score of the *Multidimensional Anxiety Scale for Children* (MASC), and the Anxiety scale $T$ score of the self-report version of the BASC-2;

3. anger, based upon the total $T$ score of the *Adolescent Anger Rating Scale* (AARS), and the Anger Control scale $T$ score of the self-report version of the BASC-2; and

4. suicide risk, as indicated by the raw score on the *Inventory of Suicide Orientation-30* (ISO-30).

**Study 2.** A few limitations of the Study 1 data are noteworthy. First, the data collected in the summer of 2008 consisted solely of participant self-report. Thus, caregiver ratings, which could support or contradict the participants’ self-report, were unavailable. Additionally, there were potential group differences among the eight participants as six of these individuals were
members of the same modified DBT group and, consequently, had different group leaders than the other two participants. Therefore, Study 2 sought to address these concerns.

In Study 2, 38 adolescent females incarcerated at the same juvenile correctional facility between September 2008 and August 2009 were assessed twice: at pre-treatment/Baseline and upon completion of the Core Mindfulness skills training group. In this study, the self-report battery was simplified, and staff members at the facility (i.e., caregivers) rated the participants on the outcome variables of depression, anxiety, anger, and aggression (see the Measures [Core Mindfulness Battery] section of this document on page 48). Of note, all of these participants were taught the Core Mindfulness skills by the same group leader and co-leader, albeit at different times over the course of the data collection year. Therefore, Study 2 consisted of a single-group, repeated measures, pre-post design in which changes in self- and caregiver-reported ratings of psychological functioning over a four-week period were measured. It was expected that participation in the Core Mindfulness module of a modified DBT skills training program would result in significant reductions in:

1. depression, based upon the Depression scale $T$ scores of the caregiver and self-report versions of the BASC-2;
2. anxiety, as indicated by the Anxiety scale $T$ scores of the caregiver and self-report versions of the BASC-2;
3. anger, based upon the Anger Control scale $T$ scores of the caregiver and self-report versions of the BASC-2;
4. aggressive behavior (e.g., fighting, threatening), based upon the Aggression scale $T$ score of the caregiver version of the BASC-2; and
5. suicide risk, as indicated by the raw score on the ISO-30.
Exploratory Research Question

Histories of sexual abuse are common among adolescents at this correctional facility and this is also a common characteristic of adult women who have been diagnosed with BPD. However, having been a victim of sexual abuse has not been studied as a moderator of the outcomes of participation in DBT, or other mindfulness-based treatments, with adult female BPD samples. Therefore, this study addressed this exploratory research question by examining whether a history of sexual abuse, as indicated in the Psychosocial Evaluation conducted during each adolescent’s intake assessment at the facility, influenced the previous outcome variables in both studies.
CHAPTER 2

METHODOLOGY

Participants

Forty-six adolescent females (“students”) incarcerated at a juvenile correctional facility in the southeastern United States participated in this study between May 2008 and August 2009. The youth at this secure facility were detained within the juvenile justice system, were in the legal custody of the state, and were required to participate in facility programs that targeted health, mental health, and educational needs. All students included in this study participated in the modified Core Mindfulness skills training program at the juvenile correctional facility.

A total of 63 students were approached to participate in Study 1. Ten individuals declined due to a lack of interest in the project. The remaining 53 students were enrolled in the study and completed at least one assessment. During the course of data collection, nine students withdrew from the study as they no longer wished to participate. Additionally, this investigator removed one individual’s data because she did not indicate on the consent form whether or not she wished to participate, and she was released from the facility before her preference could not be obtained. Of the remaining 43 individuals, only eight students completed the Core Mindfulness skills training group, as well as three assessments (two baseline assessments and the Core Mindfulness assessment). The results of Study 1 are based upon the data provided by these eight participants.

Fifty students were approached to participate in Study 2. Seven individuals declined to participate, and the remaining 43 students assented and were enrolled in the study. Of these, two students were transferred to another facility prior to their Core Mindfulness assessment.
Additionally, one student voluntarily withdrew from the modified DBT program, and enrolled in the alternative Chain Analysis group (see page 38 for detailed information about this group).

Finally, two participants withdrew from the research project as they no longer wanted to complete the questionnaires; however, they continued to participate in the modified DBT program. Thus, the results of Study 2 are based on the baseline and Core Mindfulness assessments completed by the remaining 38 students.

Site

This research was conducted within a 92-bed juvenile correctional facility for adolescent female offenders between the ages of 12 and 18. The facility grounds consist of five housing units and several other buildings related to the education, management, and treatment, of the students. Specifically, the grounds include a school, gymnasium, chapel, dining hall, administration building, security building, and social services/recreation building. Health services, including medical and psychotropic medications, are offered on site via a clinic located within one of the housing units. Additionally, an assessment center, which provides comprehensive psychological and psychosocial intake assessments for each student, as well as additional therapeutic and testing services, as needed, is located within another living unit.

Procedures (Treatment)

In July of 2007, the presiding state agency decided to implement DBT at the juvenile correctional facility in an effort to meet the treatment needs of the students, and to shift the facility toward a treatment orientation, and away from the traditional punishment orientation of correctional facilities. The former Facility Psychologist was instrumental in the adaptation of DBT for its implementation at this facility. As part of the preparation for this facility-wide change, the Facility Psychologist consulted with staff at Behavioral Tech, LLC, the company that
DBT’s developer, Marsha M. Linehan, Ph.D., founded to provide training services for mental health professionals. Through this consultation, the following treatment procedures were developed.

**Levels of training in DBT.** Based upon the Facility Psychologist’s consultation with Behavioral Tech, LLC, it was determined that formal training would be required for all relevant correctional staff to implement this treatment. Consequently, a three-tiered system of training was selected. The first tier of this training provided in-depth information about the theoretical basis for and development of DBT, the second tier provided directive instructions on how to teach the DBT skills, and the third tier provided a solid foundation of the DBT principles and its components. All of these formal training services were provided by Behavioral Tech, LLC.

Selected members of correctional staff were chosen to participate in the different levels of training. The Intensive Consultation Team (three Case Managers, two Assessment Center employees, and the Facility Psychologist) received the first tier of training. This training consisted of two weeks (80 hours) of intensive instruction on the theory behind and development of DBT. In addition, Intensive Consultation Team members participated in weekly meetings for nine months prior to the treatment implementation. During these meetings, the team discussed readings from Linehan’s (1993a, b) text and manual on DBT. Upon completion of this level of training, these staff members possessed the needed skills to begin effective and competent administration of DBT. At the time of initial data collection, each of these individuals served as a leader for one skills training group, and they also acted as consultants for other DBT providers who received less intensive training. Members of the Intensive Consultation Team met for two

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1 This section describes the training process for the overall modified DBT program at the juvenile correctional facility. However, this study only examined the Core Mindfulness component of this treatment.

2 One of these employees resigned from her position in this agency prior to the implementation of the modified DBT program in June 2008.
hours weekly to review DBT readings and procedures, address therapist concerns and adherence to DBT protocol, consult on cases, determine student placement in groups, and review material to be covered in upcoming skills training sessions.

The staff members who were selected to participate in the second tier of DBT training included five Case Managers and two Assessment Center employees. This level of training consisted of 20 hours of online instruction and detailed information about each of the DBT skills and how to teach them to the students. In addition, individuals selected to complete this level of training read the *Skills Training Manual for Treating Borderline Personality Disorder* (Linehan, 1993b) to assist them in learning how to teach the skills. Upon completion of the second level of training, these staff members possessed the knowledge needed to teach DBT skills to the students. During the course of this study, six of these individuals served as group co-leaders with one member of the Intensive Consultation Team. It is important to note, however, that completion of the online skills training rendered these individuals competent to serve as group skills training leaders in the absence (e.g., vacation and illness) of an intensively trained group leader. In fact, two Assessment Center employees who received this level of training joined the Intensive Consultation Team in June 2008 and ultimately completed a 40-hour intensive training workshop. Additionally, two treatment staff members who received this level of training co-led an alternative Chain Analysis group. Information about this group is provided on page 38.

Notably, 13 direct care staff members, including the school psychometrist, also completed the 20-hour online training by April 2009. These individuals were selected by their supervisors and the Facility Administrator as most appropriate for participation based upon their typical work schedule (e.g., time of day worked and exposure to students) and computer knowledge (i.e., their ability to complete the online training). As such, the majority of these
individuals worked shifts during the late afternoon and evening when the students were not in school. Although it was intended for these staff members to have completed the online training prior to data collection for this study, there were technical and equipment delays (e.g., lack of email addresses and computers required to complete the online training) that prevented this from happening. However, members of the Intensive Consultation Team were available, as needed, whenever questions arose. Through completion of this training, the direct care staff developed extensive knowledge of the skills that the students learned, which would enable them to assist, or “coach,” the students in the application of the skills. Ultimately, it was intended that these individuals would also co-lead skills training groups (J. C. Hammel, Ph.D., personal communication, August 20, 2008), although this did not occur during the course of the current study.

Finally, the third tier of DBT training consisted of a two-day workshop (06/09/08 and 06/10/08) that was conducted locally for selected members of the correctional staff. Participants at this training included the Intensive Consultation Team, Case Managers, Unit Managers (who supervised the cottages and cottage staff), selected direct care staff members, and other selected personnel (e.g., the facility Drug Counselor). All of the individuals who were scheduled to complete the 20-hour online training were in attendance at this two-day workshop. This training was tailored to address the implementation of DBT in a secure setting for juveniles, and both of the trainers had considerable experience using DBT with adolescent populations. Of note, one of these trainers (B. Beach) co-authored the previously discussed study of DBT implemented with incarcerated adolescent females (Trupin et al., 2002), and he had substantial experience working with a population that was comparable to that of the current study.
In addition to these three levels of formal training provided by Behavioral Tech, LLC, the Intensive Consultation Team provided “in-house” trainings to direct care staff members who did not participate in the two-day, third-tier training. A total of four trainings were held, and each consisted of an hour-and-a-half presentation on the skills that students learned in their DBT groups (C. Williams, LGSW, personal communication, August 19, 2008). Furthermore, the Facility Psychologist provided each cottage with a copy of the handouts that the students were given when they started a new skills training module. These handouts were available to keep staff members aware of the students’ current level of skill knowledge, and could help them coach students to use the skills they already learned.

**Modified core mindfulness group skills training.** As previously noted, the empirically supported treatment of DBT was modified to enable treatment implementation within this juvenile correctional facility. For purposes of this study, these modifications included shortening the duration of the Core Mindfulness treatment, limiting the availability of individual psychotherapy, and substituting telephone consultation with coaching from on-site staff. A description of this modified program is provided to help clarify the research assessment procedures.

**Orientation and commitment.** Prior to their acceptance into the overall modified DBT program, and the Core Mindfulness group in particular, students were oriented to DBT and asked to commit to the skills training groups. The process used to conduct Orientation and Commitment is described in Miller, Rathus, and Linehan (2007) and is based upon Linehan’s (1993a) work. Four members of the Intensive Consultation Team conducted a training session on 08/14/08 for the other DBT providers (i.e., Case Managers and Assessment Center employees) to demonstrate these procedures, as described in Miller et al. (2007).
Using this method, the Orientation and Commitment process was separated into two meetings. During the first meeting, one Intensive Consultation Team member introduced information about the modified DBT skills training program to the student(s) who arrived at the facility that week. This included logistical information, such as the frequency and duration of the group sessions, as well as expectations for participation (e.g., completing homework). The Intensive Consultation Team member also provided information about each of the skills training modules and the types of problems they address (e.g., Core Mindfulness skills can help individuals focus on the present moment so they can attend to the task at hand). Finally, students were informed that their participation in DBT was voluntary, and they were given information about the alternative Chain Analysis group (see page 38) that they would participate in as part of their service plan if they declined to participate in the modified DBT program. The Orientation sessions occurred on a rotating schedule so that the Intensive Consultation Team members took turns conducting this meeting. Additionally, as students usually were admitted to the juvenile correctional facility on Tuesdays, these meetings were scheduled typically for the end of the week. This allowed students to have a few days to adjust to the facility, and it increased the likelihood they would differentiate the DBT orientation from the standard facility orientation procedures and meetings (e.g., presentation of facility rules and initial meeting with Case Manager) that occurred during the first 24 hours of their arrival.

The second meeting occurred during the following week in which each student met individually with her Case Manager for the Commitment phase. During the Commitment meeting, the student and Case Manager engaged in an active discussion to obtain the student’s commitment to the modified DBT program. To do so, the Case Manager employed different strategies, such as playing Devil’s Advocate, using the foot-in-the-door technique, and
cheerleading, to ascertain the student’s commitment to the program. Once a student was committed to the program, she was asked to sign the Orientation and Commitment form, and she was assigned to a group. If a student did not commit to participate in the modified DBT skills training program, then she was placed in the Chain Analysis group.

**Core mindfulness group structure.** After students were oriented and committed to the modified DBT program, they were placed in a four-week, modified Core Mindfulness skills training group. While devising the modified DBT program, the Intensive Consultation Team determined that every student should participate in Core Mindfulness training first because these skills were integrated into the remaining three modules (Linehan, 1993b). The duration of the Core Mindfulness group (i.e., four weeks) was established as part of the overall modified DBT program. Specifically, each skills training module was designed to last four weeks so one complete cycle of skills training would take four months, which was the average length of time that students were placed at the juvenile correctional facility. The goal of this schedule was to increase the likelihood that students were exposed to every skills training module.

The group leaders and co-leaders followed a structured format for each session so the same skills were taught during the same session in each rotation of the groups. This format consisted of handouts developed by Miller, Rathus, Landsman, and Linehan (2003) and Linehan (1993b), which were used with the authors’ permission. In addition, an open group format was used whereby students joined a group at the beginning of the module (Miller et al., 2007). If students arrived at the juvenile correctional facility after the module began, they were not placed into a skills training group until the beginning of the next module. Thus, students could be placed at the facility for as many as four weeks before they started to participate in Core Mindfulness skills training. In the event that a student moved to another cottage during the middle of a
module, she remained in her original Core Mindfulness group, and traveled to that group’s meeting location on the facility grounds. The size and number of groups were determined by the Intensive Consultation Team and depended on the facility population (maximum = 92). During this study, there were between three and five modified DBT groups which were led concurrently. For the purposes of this study, the number of participants in each Core Mindfulness group ranged from three to nine, based upon the juvenile correctional facility’s population. All Core Mindfulness skills training groups were scheduled to meet twice per week for one hour and fifteen minutes per session. All groups followed the same format in which new material was taught during one session, and homework assignments and previously learned materials were reviewed during the second session.

**Group rules.** Several group rules were established based on rules implemented by Linehan (1993b) and Miller et al. (2007). Specifically, the information discussed in group was confidential, students could not discuss their past suicidal behavior with other group members, students could not be mean or disrespectful toward one another, and students could not be involved in a sexual relationship with another group member. Additionally, if students asked another group member for help when they felt suicidal, they had to be willing to accept help from that person. Finally, unexcused absences (e.g., refusal to attend group, being in “Time Out,” and being asked to leave group due to mean or disrespectful behavior) were limited to four within one four-month cycle of modified DBT skills training. Once a student had four unexcused absences, she was transferred to the Chain Analysis group for the duration of the treatment cycle. These students could reapply for participation in the modified DBT program at the beginning of the next cycle; however, they had to be re-committed to the program following the commitment process previously described. Additionally, students were allowed to voluntarily terminate their
participation in the modified DBT program and transfer to the Chain Analysis group without having obtained four unexcused absences. The justification for this policy was that participation in the modified DBT program must be voluntary and, thus, students could decide to voluntarily change groups if they were no longer committed. It was noted that certain absences, for instance due to illness or court hearings, were excused and did not count toward the four unexcused absences rule.

*Individual psychotherapy.* In addition to the group skills training, students who had significant mental health concerns were referred for individual psychotherapy. The majority of students in individual psychotherapy were seen by the Facility Psychologist until her resignation from this position in December 2008. Students who did not receive psychotherapy from the Facility Psychologist received such services from another member of the Intensive Consultation Team, or a member of the Assessment Center staff. Of note, all students at the juvenile correctional facility had weekly meetings with their Case Managers. As previously noted, all of the Case Managers participated in the two-day DBT training, five Case Managers participated in the 20-hour online skills training, and three Case Managers participated in the 80-hour intensive training. Therefore, all of these individuals had the requisite training to coach students during their weekly meetings to use the skills they learned. That said, the individual counseling that students received from their Case Managers varied according to their needs and the content of their Individualized Service Plans. Thus, it was unlikely these meetings could focus solely on the application of DBT skills to the student’s daily activities.

*Modifications from traditional DBT.* Prior to the implementation of the modified DBT skills training program, two primary modifications from traditional DBT were deemed necessary to meet the constraints of implementing this treatment within a correctional facility. First, the
duration of participation in outpatient DBT is typically one year. However, most students did not remain at the juvenile correctional facility for that long (average length of stay was four months). Therefore, the therapy process was formatted so that one cycle of the modified DBT program was completed in four months (one module per month), ensuring that most students would be exposed to the skills for each module before their release. Thus, of concern for this study, the duration of Core Mindfulness skills training was reduced from three months to one month.

Second, due to the limited number of staff members who could provide therapy and the need for Case Managers to address non-DBT issues with their students during their weekly meetings, it was not possible for every student to receive individual psychotherapy. Instead, students received individual psychotherapy if they were referred to such services by their Case Manager, in accordance with their Individualized Service Plan.

Subsequent to the implementation of the modified DBT skills training program, two additional modifications were warranted. First, treatment and administrative personnel decided not to use Diary Cards. During the initial development of the modified DBT skills training groups, it was expected that students would complete Diary Cards to track their use of the DBT skills, as well as their thoughts and feelings, such as suicidal and self-harm thoughts, aggression, anger, and sadness (C. Williams, personal communication, August 25, 2008). However, in the spring of 2009, it was decided that Diary Cards would not be used and, therefore, this aspect of the treatment was never implemented. Second, a behavior modification points system was not implemented. Originally, treatment providers expected students to earn points for their use of DBT skills under a behavior modification points system. These points were intended to go toward earning a higher level within the cottage and to earning individual (e.g., extra phone call) and cottage privileges (e.g., movie and popcorn). Unfortunately, this point system was not
employed at the juvenile correctional facility during the data collection period, and thus is not considered part of the treatment protocol.

*Chain analysis group.* When students declined to participate in the modified DBT program, they were enrolled in the alternative treatment program, a Chain Analysis group, which met once per week for one hour. The purpose of this group was to teach students how to identify one of their problem behaviors and dissect it into a sequence of preceding and subsequent events. Specifically, students were taught to identify the events, emotions, and behaviors that made them vulnerable to engaging in the problem behavior, the event(s) that “caused” the problem behavior, the thoughts, feelings, and actions that linked the prompting event with the problem behavior, and the resulting consequences that might have positively or negatively reinforced the problem behavior (Miller et al., 2007). Examples of problem behaviors that were addressed in the Chain Analysis group are fighting, throwing objects, and speaking or behaving disrespectfully to staff. The Chain Analysis group was lead by two treatment team members who were also trained to lead the modified DBT skills training groups via the second and third-tiers of DBT training. Of note, very few students chose to participate in the Chain Analysis group, and there were always less than five individuals in this group at any given time.

**Procedures (Research)**

The University of Alabama’s Institutional Review Board (IRB) approval was obtained to conduct research on the standard intake assessment performed when students were admitted to this facility (IRB Protocol #06-005), and on the effectiveness of the modified DBT program (IRB Protocol #08-005). This dissertation fell under the auspices of these two research studies. Additionally, the juvenile correctional facility’s governing state agency approved this project.

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3 Per facility policy, each student had to participate in either the modified DBT program or the Chain Analysis group as a condition of her Individualized Service Plan.
prior to the research implementation. Data were collected by this investigator on-site at the juvenile correctional facility. No identifying information on any participant was removed from the facility, and all participants were identified by a random research identification number. Neither participant names nor agency assigned file numbers were recorded on the measures for this study.

Students were approached for participation in this study after they were oriented and committed to participation in the modified DBT program. Based upon the orientation and commitment schedule, students typically were not approached until the middle of their second week at the juvenile correctional facility. By that time, each student’s reading ability was determined according to the protocol of the Assessment Center (IRB Protocol #06-005). In brief, reading levels were assessed with the *Wide Range Achievement Test: Fourth Edition* (WRAT4; Wilkinson & Robertson, 2006), and this investigator pre-screened students’ reading levels from the Assessment Center records before any students were approached for this research project. This procedure was implemented because participants’ reading abilities influenced how the assessment battery was administered.

**Consent/assent for participation in research.** The consent/assent procedures were the same in both studies. Informed assent was sought from each student on an individual or group basis. This investigator met with each student in one of the testing rooms of the Assessment Center, or in a quiet location in the student’s cottage of residence (e.g., library, kitchen, or empty common area). The investigator subsequently read the Informed Consent/Assent for Participation in DBT Research Project (Appendix B) to her. This investigator asked the student questions about the project to determine her level of understanding, and she answered the student’s questions, if any, about the project. Following this discussion, each student was asked to indicate
on the assent form whether or not she wanted to participate in this research project by checking the appropriate statement and signing the form in ink. This investigator signed the assent form as the witness. It is noted that, as all of the students at the juvenile correctional facility were retained in state custody, the governing state agency’s administration was considered to be their legal guardian, rather than their parents. Therefore, the informed consent/assent form was signed by a member of the governing state agency’s administration as the Legal Guardian.

**Study 1: Baseline 1, baseline 2, and core mindfulness assessments.** After assent was obtained, each student completed the assessment battery in an individual or group testing format with this investigator. The pre-treatment assessment was conducted in a quiet location in the student’s cottage of residence (e.g., library, kitchen, or empty common area) that had appropriate seating (e.g., table and chairs). The assessment battery consisted of five self-report measures (see *Measures [Core Mindfulness Battery]* on page 48, all of which were completed by marking one’s response on the measure with a pen or pencil. This investigator gave the packet of assessment measures to the student, read the directions to her, and answered her questions, if any. If the student had a sufficient reading level to complete the measure on her own, then the investigator gave her a pencil and the student completed the form. If the student’s reading level fell below the required minimum for the measure, then this investigator read the measure to her and the student either indicated her responses verbally (which was marked by this investigator), or marked her responses on her copy of the measure with a pencil. This process was repeated for each of the measures in the battery, at each of the three assessment points in the study.

It is noted that, even if a student had a sufficient reading level to complete the measures by herself, this investigator read the battery to her if this was her preference. The purpose of this format was to reduce student fatigue and ensure motivation and optimal effort when completing
the measures. Additionally, although the instructions for each measure were read to the students, this investigator asked students to base their responses on the past month. This ensured an equal amount of time was covered at each assessment time point.

**Study 2: Baseline assessment.** The data collection procedures for Study 2 were very similar to those of Study 1. In brief, after assent was obtained, each student completed the five self-report measures in the battery (see *Measures [Core Mindfulness Battery]* on page 48) in an individual or group testing format, with this investigator, in one of the previously described locations. As in Study 1, if the student preferred to have the measures read to her, then the investigator read the items, and either the investigator or the student marked the responses on the measure. Again, students were asked to base their responses on the past month to ensure an equal amount of time was covered at each assessment time point.

There are several noteworthy differences in the data collection process between Study 2 and Study 1. First, in contrast to Study 1, during Study 2 the measures in the Core Mindfulness battery were presented in counterbalanced order, with the exception of the *Inventory of Suicide Orientation-30* (ISO-30), which was always presented last due to the nature of its content. Second, in Study 2, when the investigator read a measure aloud to a student, she placed a sheet with the corresponding response choices for that measure in front of the student. This list of choices could be referred to, as needed, as a reminder of the response options, and appeared to ease the response process. There was a separate response sheet for each measure, and the responses were typed in large, boldfaced print. Third, group leaders and co-leaders were asked to complete a brief assessment of their satisfaction with the modified DBT program (detailed in the *Group Leader and Co-leader Satisfaction Ratings* section of this document on page 47).
Fourth, Study 2 included caregiver reports of student behavior and objective psychological presentation. To complement each student’s self-report, cottage staff members were asked to complete 53 items that corresponded to three Primary Scales (i.e., Depression, Anxiety, and Aggression), one Content Scale (i.e., Anger Control), and one Validity Indicator scale (i.e., F-Index) of the *Behavior Assessment System for Children, Second Edition* (BASC-2) caregiver version (Parent Rating Scales – Adolescent; PRS-A). These scales were selected to monitor student behavior in target areas of Core Mindfulness skills training while minimizing staff burden. Additionally, the *F*-Index was included to assess for an overly negative view of the student. As this baseline assessment was typically conducted during each student’s second week at the facility, staff members had an opportunity to observe a student for approximately one-and-a-half weeks before they were asked to rate this individual’s behavior. Often, the individuals who completed the PRS-A were early morning and afternoon shift staff members who interacted with the students regularly outside of school hours. Staff members were asked to complete this measure within one week of its receipt.

**Study 2: Core mindfulness assessment.** During the second assessment time point for Study 2, students completed an abbreviated battery, which enabled investigation of the effect of Core Mindfulness skills training on depression, anxiety, anger, aggression, and suicidal ideation. Within a week of completion of the Core Mindfulness module, students were approached to complete a brief self-report assessment. This assessment consisted of several subscales from the BASC-2 Self-Report of Personality – Adolescent (SRP-A), and the ISO-30. The selection from the BASC-2 consisted of two Primary Scales (i.e., Depression and Anxiety), one Content Scale (i.e., Anger Control), and one Validity Indicator scale (i.e., *F*-Index). These scales were chosen because they reflected areas to be targeted by Core Mindfulness, and they allowed a comparison
between the student and caregiver report. Additionally, the $F$-Index was selected to monitor students for infrequent responses that would yield a negative self-presentation. This abbreviated battery of 47 items was developed to monitor student ratings while simultaneously minimizing student burden and fatigue. Students were also asked a series of questions about the Core Mindfulness module to assess their knowledge and understanding of the material (detailed in the Treatment Objectives Measurement section on page 45 of this document). The same administration procedures described for the baseline assessment were followed for the Core Mindfulness assessment.

Next, ongoing behavioral data were collected in the form of staff report and disciplinary charges. At the end of the Core Mindfulness skills training module, cottage staff members were given a copy of the PRS-A, and were asked to complete the same 53 items that were completed during the baseline assessment. When possible, the same individual who completed a student’s baseline assessment was asked to complete the selected items for the Core Mindfulness assessment. However, this was not always possible as students moved to different cottages, which had different staff members, based upon their treatment needs and behavior. Therefore, it was expected that, over the course of the treatment period, more than one staff member would complete the PRS-A for each student. Staff members were asked to complete the PRS-A within one week of the end of the Core Mindfulness module.

In addition to the staff reports, disciplinary infractions (“charges”) were recorded on an on-going basis, effective the date students started Core Mindfulness skills training, in order to monitor the frequency of problematic behaviors, such as opposition (e.g., defiance) and aggression (e.g., fighting). Disciplinary charges were assigned by cottage staff members, including those individuals who rated student behaviors on the BASC-2 PRS-A. Although
treatment staff, such as DBT group leaders and co-leaders, could assign disciplinary charges to students, this did not occur during the course of Study 2.

After a staff member assigned a charge to a student, this written documentation was placed in the student’s file in a central location in the Facility Administration Building. Disciplinary hearings were held weekly in which the student and staff had the opportunity to discuss the charge. Subsequent to the hearing, the disciplinary outcome was disseminated. Therefore, throughout the course of this study, this investigator recorded the type of charge, if any, assigned to each student, as well as the date, assigning staff member, and the consequence or outcome of the disciplinary hearing. The type and frequency of disciplinary infractions incurred during the four-week Core Mindfulness skills training module were reported.

**Participant compensation.** The possibility of compensation for study participants was considered, and ultimately deemed inappropriate. The primary reason for this decision was because students who were placed at the juvenile correctional facility at the time of Study 1 (summer 2008) were not offered compensation, as they were expected to receive rewards via the behavior modification points system. However, as previously described, the behavior modification plan was not implemented. At the time of Study 2 (September 2008 – August 2009), the investigator decided participant compensation would not be appropriate because it would conflict with the juvenile correctional facility’s policy against favoritism, as the individuals who participated in Study 1 were not eligible to participate in Study 2. Additional factors that contributed to this decision included the nature of the students’ incarceration and the investigator’s desire to ensure that participation was not coerced.

During the course of data collection, it became apparent that staff members and group leaders were asked to complete their respective measures for as long as one year due to the
longitudinal nature of this study. In fact, most staff members completed more forms, for a considerably longer period of time, than the students in this study. Therefore, compensation for staff members who completed this task in addition to their work responsibilities was considered warranted. As such, cakes, cookies, fruit, and/or vegetables were available when staff members completed the BASC-2 PRS-A, as well as when group leaders and co-leaders completed the feedback forms (see Group Leader and Co-leader Satisfaction Ratings on page 47).

**Treatment Objectives Measurement**

For Study 2, two forms of data were collected to assess whether the treatment objectives were met. First, students were asked to answer questions about the Core Mindfulness module (see Appendix C) as part of the Core Mindfulness assessment. The purpose of these questions was to assess students’ knowledge and understanding of the material. For instance, students were asked to provide an example of when they used a Core Mindfulness skill or to explain a particular skill. Student responses suggested whether or not they learned the skills, and if the information they provided was consistent with the material they were taught in their handouts, which were developed by Miller, Rathus, Landsman and Linehan (1999) and Linehan (1993b).

Second, group leaders and co-leaders provided feedback at the end of each Core Mindfulness module. In order to document each student’s participation in the modified DBT skills training groups, one member of the Treatment Team developed the Dialectical Behavior Therapy Skills Group Progress Summary form (Appendix D). At the completion of each module, the group leader and co-leader completed one form for each student in their group to rate her performance for that particular module. This form indicated a rating of each student’s level of involvement (Unsatisfactory, Satisfactory, or Excellent) in the following areas: Attendance; Participation; Willingness to Learn; Attitude. Additionally, the leaders indicated on the form if
the student was present during the sessions in which the objectives and skills were taught. Group leaders and co-leaders provided copies of these forms to this investigator. Through examination of all of the forms for each set of leaders, this investigator determined, according to the leaders’ self-report, whether or not all of the scheduled topics were covered in the Core Mindfulness module.

Both objectives measurements are limited by their reliance upon student and group leader self-report. However, traditional forms of integrity checks (i.e., audiotapes of treatment sessions) were not considered viable options due to the lack of independent raters. However, it is fortunate that the format of DBT fosters natural checks to help ensure the skills taught to the students were the same skills as those developed by Linehan (1993a; 1993b). This was accomplished through three means. First, the three-tiered levels of training presented a solid foundation of the DBT principles and its components (third tier), directive instructions on how to teach the skills (second tier), and in-depth information about the theoretical basis for and development of DBT (first tier). Second, the use of two leaders to conduct skills training groups required the leaders to observe one another and be in agreement about how the material was presented. Moreover, leaders should have demonstrated the dialectical process when they conducted the skills training groups. For instance, if one group leader seemed to drift away from the session’s agenda or material, it was the responsibility of the other group leader to re-direct them back to the purpose at hand. In this regard, each leader was responsible for conducting continual, informal integrity checks on the other leader.

Third, the weekly Team meetings involved problem solving of issues that rose during the skills training groups and difficulties in teaching the material, as well as discussions of the DBT readings. These meetings provided opportunities for leaders and co-leaders to describe how they
taught the skills and receive feedback from the team, including comments about the consistency of their teaching to that developed by Linehan (1993b). However, training and participation in meetings cannot guarantee that the appropriate treatment was provided, or that the quality of the treatment was adequate and consistent among providers (Kendall, Holmbeck, & Verduin, 2004), which was, unfortunately, a limitation of this study.

**Group Leader and Co-leader Satisfaction Ratings**

It was possible that group leader and co-leader satisfaction with the overall modified DBT program influenced the effect this treatment had on the outcome variables in Study 2. Therefore, in addition to the measures completed by the students and cottage staff, all DBT group leaders and co-leaders were asked to complete a brief, three-item questionnaire at the end of each module. This questionnaire asked group leaders about their satisfaction with DBT as a treatment, how well they believed DBT helped the students, and how much they enjoyed leading DBT groups (see Appendix E). Group leaders and co-leaders were not asked to provide information about any student on this form. Moreover, in order to keep this feedback anonymous, no names were written on the forms, and thus, it was not possible to determine who provided particular satisfaction ratings. This enabled documentation of group leader and co-leader satisfaction with the modified DBT program, while simultaneously keeping the identity of the respondent unknown to the investigator.

**Confidentiality**

In order to maintain confidentiality, all assessment materials containing data, with the exception of the PRS-A, were coded with each student’s research identification number. The PRS-A, however, had the student’s name written on it in pencil when it was given to a staff member to be completed. This prevented confusion when staff members completed forms for.
multiple students during the same period. When staff members returned the completed PRS-A forms, this investigator erased the student’s name and coded the form with the student’s research identification number. No assessment materials that contained student names were removed from the facility.

A master list containing student names and related codes was kept in a locked file cabinet in the Assessment Center of the juvenile correctional facility. Data were entered into the database on a computer dedicated to the assessment of the students. Data entered contained only student research identification numbers and did not contain any student names or other identifying information. A disc copy of the de-identified data was transported from the juvenile correctional facility to this investigator’s office and residence for statistical purposes. Data on the computer disk were completely confidential and there was no link to individual students.

All responses on the individual measures of the assessment battery were kept confidential, with the exception of questions that addressed suicidal and self-harm thoughts and behaviors. Per agency protocol, if a student indicated that she was thinking of harming herself or that she had harmed herself, then the licensed mental health clinician (formerly the Facility Psychologist, currently the Acting Treatment Coordinator), or his/her designee, had to be notified. Additionally, any expressed thoughts to harm someone else required the notification of the licensed mental health clinician or his/her designee. This limit on confidentiality was explicitly stated in the informed consent document (see Appendix B).

Measures (Core Mindfulness Battery)

Behavior Assessment System for Children, Second Edition (BASC-2). The BASC-2 is a comprehensive set of rating scales that assists in the assessment of overall functioning and various behavioral and emotional problems of children and adolescents. The BASC-2 has several
versions that pertain to specific age ranges and within each age range, this measure consists of
different types of forms to be completed by separate raters (i.e., parent, youth). Raw scores on
this measure are transformed into $T$ scores ($M = 50, SD = 10$; Reynolds & Kamphaus, 2004). The
BASC-2 is appropriate for use in forensic settings, program evaluation, and for research
purposes (Reynolds & Kamphaus, 2004). The adolescent version of the BASC-2 (ages 12-21)
was used in this study to assess the students’ level of psychological, emotional, and behavioral
functioning.

The Parent Rating Scales – Adolescent (PRS-A) version of the BASC-2 was devised to be completed by a parent or custodial caregiver to assess youth behavior in “community and
home settings” (Reynolds & Kamphaus, 2004, p. 4). In Study 2, this measure was completed by
staff members who interacted regularly with the participants in their cottages. This measure
consists of 150 items measured on a four-point Likert scale (i.e., Never, Sometimes, Often,
Almost always). The PRS-A consists of 14 Primary Scales, seven Content Scales, four
Composite Scales, and three validity scales. For this study, the scales of interest on the PRS-A
are Aggression (tendency to behave in a hostile manner), Anxiety (nervousness, fearfulness, or
worrying), Depression (feeling of sadness), and Anger Control (tendency to become angry
quickly and unable to exercise self-control; Reynolds & Kamphaus, 2004). The Aggression scale
consists of ten items, the Anxiety scale consists of 11 items, the Depression scale is made of 13
items, and the Anger Control scale has nine items, four of which overlap with items on the three
previous scales. The PRS-A is written at a fourth grade reading level, and takes 10 to 20 minutes
to complete. Caregivers completed the scales of interest on the PRS-A during the Baseline and
Core Mindfulness assessments in Study 2.
Internal consistency of the PRS-A is considered to be adequate as alpha coefficients for adolescent females on the various scales range between .70 and .87 for the general norm sample, and between .74 and .89 for the clinical norm sample (Reynolds & Kamphaus, 2004). Internal consistency for the Aggression scale is .84 (ages 12-14 and 15-18) for caregiver ratings of the female general norm sample, and .87 for caregiver ratings of the adolescent female clinical norm sample. The Anxiety scale yields internal consistency ratings of .81 (ages 12-14 and 15-18) based on caregiver ratings for the female general norm sample. Internal consistency for the Anxiety scale is .79 for the caregiver ratings of the adolescent female clinical norm sample. Internal consistency for caregiver ratings of the Depression scale, using the female general norm sample, are .86 and .85 for ages 12-14 and 15-18, respectively, and .89 for caregiver ratings of the adolescent female clinical sample. Finally, the internal consistency for the Anger Control scale is .67 and .69 based on caregiver ratings of the female general norm samples (ages 12-14 and 15-18, respectively), and .74 for caregiver ratings of the adolescent female clinical sample.

Test-retest reliability of the PRS-A is considered to be adequate (Reynolds & Kamphaus, 2004). This reliability was established using caregivers who rated a sample of adolescents ($n = 88$) over a period of 23 to 62 days (Median = 41). Test-retest reliabilities for the scales of interest are as follows: Aggression (.72); Anxiety (.86); Depression (.87); and Anger Control (.77). Additionally, interrater reliability ratings, provided by two separate caregivers over a period of 0 to 70 days (Median = 35) for a sample of adolescents ($n = 51$), is considered to be adequate. Interrater reliabilities for the scales of interest are as follows: Aggression (.79); Anxiety (.69); and Depression (.86). Interrater reliability was not reported for the Anger Control scale.

The Self-Report of Personality (SRP-A), which was completed by the participants, consists of 176 items that are used to assess an adolescent’s personality and behavioral problems.
The first 69 items on this measure consist of True/False statements, while the remaining 107 items are measured on a four-point Likert scale (i.e., Never, Sometimes, Often, Almost always). The SRP-A consists of 16 Primary Scales, four Content Scales, and five Composite Scales. The scales of interest on the SRP-A are Anxiety (feelings of nervousness or being overwhelmed by problems), Depression (feelings of unhappiness or sadness), and Anger Control (tendency to become angry quickly and unable to exercise self-control; Reynolds & Kamphaus, 2004). The Anxiety scale consists of 13 items, the Depression scale consists of 12 items, and the Anger Control scale consists of 14 items, although four of these items overlap with those on the previous two scales. The SRP-A is written at a third grade reading level, and takes 20 to 30 minutes to complete. Participants completed the scales of interest on this measure at each assessment time point in both studies.

Internal consistency of the SRP-A ranged from acceptable to adequate as alpha coefficients for adolescent females on the various scales ranged between .68 and .89 for the general norm sample, and between .64 and .90 for the clinical norm sample (Reynolds & Kamphaus, 2004). Internal consistency ratings for the Anxiety scale are .86 and .85 (ages 12-14 and 15-18, respectively) for the adolescent female general norm sample, and .88 for the adolescent female clinical norm sample. Internal consistency ratings for the Depression scale using the adolescent female general norm sample are .88 and .85 for ages 12-14 and 15-18, respectively, as well as .89 for the adolescent female clinical sample. Finally, the internal consistency ratings for the Anger Control scale are .87 and .85 for the female general norm samples (ages 12-14 and 15-18, respectively), and .88 for the adolescent female clinical sample.

Additionally, test-retest reliability is considered to be adequate. This reliability was established using a sample of adolescents (n = 107) who completed the SRP-A twice over a
period of 14 to 51 days (Median = 20). Test-retest reliabilities for the scales of interest are as follows: Anxiety (.69); Depression (.81); and Anger Control (.74).

Validity was established separately for both the PRS-A and SRP-A through the same four methods (Reynolds & Kamphaus, 2004). First, intercorrelations were performed among the measures’ scales, and factor analyses were conducted to group the individual Primary Scales into the Composite Scales. Additionally, convergent validity was demonstrated through correlational analyses that compared scores on these versions of the BASC-2 to scores on other measures of behavior (e.g., the Child Behavior Checklist). Next, profiles were created based upon caregiver reports and self-reports for groups of adolescents in the clinical norm sample who met criteria for certain disorders (e.g., Bipolar Disorder). Finally, content validity was established for the items in relation to corresponding diagnostic criteria.

**Reynolds Adolescent Depression Scale, Second Edition (RADS-2).** The RADS-2 is a 30-item self-report measure that can be used to evaluate current depressive symptomology in adolescents. Depressive symptoms are classified within four dimensions (Dysphoric Mood, Anhedonia/Negative Affect, Negative Self-Evaluation, and Somatic Complaints), and a Depression Total Scale reflects the overall level of severity. Items are rated on a four-point Likert scale (i.e., *Almost never, Hardly ever, Sometimes, Most of the time*), and raw scores are converted to *T* scores (*M* = 50, *SD* = 10). Additionally, there are six critical items and a clinical cutoff score to assist with interpretation. The RADS-2 is written at a first grade reading level, takes approximately five to ten minutes to complete, and can be administered in individual or group format.

Internal consistency for the RADS-2 ranged from adequate to excellent. In particular, internal consistency ratings for a school sample of females ranged from .80 (Somatic
Complaints) to .93 (Depression Total), while ratings for the clinical sample ranged from .81 (Somatic Complaints) to .94 (Depression Total; Reynolds, 2002). Criterion validity was established through significant correlations between the scales on the RADS-2 and other self-reported ratings of depression (e.g., scales on the Adolescent Psychopathology Scale; Reynolds, 2002).

Test-retest reliability for the RADS-2 is considered to be adequate. Test-retest reliability for the school sample ranged from .77 (Somatic Complaints) to .85 (Depression Total), while the same reliability for the clinical sample ranged from .81 (Anhedonia/Negative Affect and Somatic Complaints) to .89 (Depression Total). This measure was used to evaluate depressive symptoms in Study 1, as participants completed this measure at all three assessment time points.

**Multidimensional Anxiety Scale for Children (MASC).** The MASC is a 39-item self-report measure that assesses anxiety symptoms in children and adolescents. Responses yield scores on four scales (Physical Symptoms, Social Anxiety, Harm Avoidance, and Separation/Panic) and three indices (Anxiety Disorders, Total Anxiety, and Inconsistency). Participants respond to items using a four-point Likert scale (i.e., *Never true about me, Rarely true about me, Sometimes true about me, Often true about me*), and raw scores are computed into *T* scores (*M* = 50, *SD* = 10). The MASC takes approximately 15 minutes to administer and it requires a fourth grade reading level.

There was considerable variability in the internal reliability ratings on the MASC, which ranged from not acceptable to adequate. Specifically, internal reliability ratings for adolescent females (ages 12 to 15) ranged from .458 (Perfectionism) to .876 (MASC Total Anxiety); the same ratings for an older sample of females (ages 16-19) yielded a comparable range of .494 (Perfectionism) to .884 (MASC Total Anxiety; March, 1997). Of note, the sole scale of interest
for this study is the MASC Total Anxiety scale, which demonstrated adequate internal reliability ratings. In addition, test-retest reliability over a three-month period was considered excellent (.933) for the MASC Total Anxiety scale.

Construct validity was established via correlational analyses with scales on the Revised Children’s Manifest Anxiety Scale (March, 1997). The MASC was used to evaluate symptoms of anxiety in Study 1, as participants completed this measure at all three assessment time points.

**Adolescent Anger Rating Scale (AARS).** The AARS is a 41-item self-report measure that assesses anger expression in adolescents, and can help to identify adolescents at risk for developing symptoms of disruptive behavioral disorders, such as Conduct Disorder, Oppositional Defiant Disorder, and Attention-Deficit/Hyperactivity Disorder. The intensity and frequency of participant anger is reported, yielding a total score and three subscale scores (Instrumental Anger, Reactive Anger, and Anger Control). Items are rated on a four-point Likert scale (i.e., *Hardly ever, Sometimes, Often, Very often*), and raw scores are converted to standard *T* scores that have a mean of 50 and a standard deviation of ten. The AARS is written at a fourth grade reading level, and can be completed in 5-10 minutes (individual administration) or 10-20 minutes (group administration).

Adequate to excellent internal consistency has been established for the AARS. Internal consistency ranged from .80 (Reactive Anger in sixth to eighth grade females) to .91 (Total Anger score in sixth to eighth grade females; Burney, 2001). Construct validity was established via exploratory and confirmatory factor analyses, as well as strong correlations with subscales of the Conners-Wells Self-Report Scales – Long (Burney, 2001).

Test-retest reliability is considered adequate for the AARS. These reliability ratings ranged from .71 (Instrumental Anger and Reactive Anger) to .79 (Total Anger) over a two-week
period (Burney, 2001). The AARS was used to evaluate feelings of anger in Study 1, as participants completed this measure during all three assessment periods.

**Inventory of Suicide Orientation-30 (ISO-30).** The ISO-30 is a 30-item self-report measure that can be used to identify adolescents who may be at risk for attempting suicide. It provides an overall suicide risk classification (i.e., high, moderate, and low) based on measurements of hopelessness and suicidal ideation. Participants rated the individual items on a four-point Likert scale (i.e., *I am sure I disagree, I mostly disagree, I mostly agree, I am sure I agree*) to yield a raw score (range: 0 to 90) and a critical item score. These two scores are combined to create the overall risk classification. Although the instructions for this measure ask participants to complete the questions for the past six months, the items can capture present state conditions. The ISO-30 takes approximately ten minutes to complete, and it is written at a sixth grade reading level.

The ISO-30 has adequate to excellent internal consistency. Specifically, internal consistency analyses yielded alpha coefficients of .92 and .90 for the raw score, and .79 and .78 for the critical items in clinical and student samples of adolescents, respectively (King & Kowalchuk, 1994). The raw score of the ISO-30 was also shown to have strong correlations with the *Beck Hopelessness Scale* (*r* = .64), the *Suicidal Ideation Questionnaire* (SIQ; *r* = .64), and the *Suicidal Ideation Questionnaire-JR* (SIQ-JR; *r* = .55). Furthermore, the critical item score correlated with the SIQ (*r* = .72) and the SIQ-JR (*r* = .64).

In terms of test-retest reliability, the ISO-30 demonstrated adequate reliability. Test-retest reliability was .80 for the raw score, and .70 for the critical item score over a three to four day period (King & Kowalchuk, 1994). This measure was used to evaluate suicide risk at each assessment time point in both studies.
Measures (Supplemental)

Kaufman Brief Intelligence Test, Second Edition (KBIT-2). The KBIT-2 is a screening measure that assesses the intellectual ability of individuals ages four through 90. The KBIT-2 consists of two measures of verbal abilities (Verbal Knowledge and Riddles subtests) and one measure of nonverbal abilities (Matrices). Completion of this test yields estimated Verbal and Nonverbal Index scores, as well as an IQ Composite score. Raw scores are converted to age-based standard scores ($M = 100, SD = 15$). It is administered one-on-one, and can be completed within 15 and 30 minutes.

Adequate to excellent internal consistency has been established for the KBIT-2. Internal consistency ratings for adolescent samples (ages 12-18) ranged from .89 to .94 (Verbal Index), from .86 to .91 (Nonverbal Index), and from .92 to .95 (IQ Composite; Kaufman & Kaufman, 1997). Correlations with other measures of intellectual ability (e.g., Wechsler Abbreviated Scale of Intelligence) suggested a strong relationship with the KBIT-2 (Kaufman & Kaufman, 1997).

Moreover, test-retest reliability is adequate to excellent for this measure. Test-retest reliabilities were .83 (Nonverbal), .92 (IQ Composite), and .95 (Verbal) for ages 13 to 21 (Kaufman & Kaufman, 1997). The IQ Composite score of the KBIT-2 was used to control for intellectual functioning in all analyses for both of these studies.

Wide Range Achievement Test: Fourth Edition (WRAT4). The WRAT4 is used to assess the current level of functioning of children, adolescents, or adults in the specific academic areas of word reading, sentence comprehension, spelling, and math computation abilities. For purposes of this study, only the word reading subtest score was used. The word reading score requires examinees to read aloud words in order to assess pronunciation errors. The WRAT4 can
be administered using one of two alternate forms. Raw scores for responses are computed into either age- or grade-based standard scores ($M = 100, SD = 15$).

The word reading subtest has demonstrated excellent internal consistency. For the adolescent population, internal consistency ratings for this subtest ranged from .91 (ages 17-18) to .95 (ages 15-16; Wilkinson & Robertson, 2006). Validity was established via correlational analyses with other tests of academic achievement (e.g., Wechsler Individual Achievement Test-Second Edition). The standard score on the word reading subtest was used to determine participant reading ability (i.e., grade level), and whether a student could complete a self-report measure independently, or if the measure needed to be read to her.

**Disciplinary charge log.** Written documentation of disciplinary infractions, or charges, for each student was placed in the student’s file in a file room in the Facility Administration Building. Although lists of these charges were also located in each student’s cottage of residence, the file room’s central location was ideal for data collection because it afforded simultaneous access to all participants’ records with minimal chance of disruption. The charge documentation contained the date of the offense, type of charge, assigning staff member, and the outcome of the disciplinary hearing. All of this information was collected for each student’s self harm, refusal of supervision, physical assault, sexual assault, and verbal assault charges. Descriptions of the major and minor offenses, according to the correctional facility’s Student Handbook, are found in Tables 1 and 2, respectively.

**Psychosocial evaluation.** This semi-structured interview was administered to each student by a member of the Assessment Center within the first two weeks of her arrival at the facility. This interview gathered a comprehensive social history for each student, including
familial, social, and academic functioning. Demographic information, legal history, and sexual abuse history about each student were obtained from this evaluation.

**Power Analysis**

A power analysis was performed using the G*Power 3.0.3 program to determine the sample size needed to obtain statistically significant results. The hypotheses for this study were tested using single-group, repeated measures multivariate analyses of covariance (MANCOVAs) with within-subjects factors. The separate MANCOVAs analyzed the data over three (Study 1) and two (Study 2) time points.

The power analysis for Study 1 revealed that a single-group (i.e., the treatment group) study that consisted of three repetitions of the outcome measures (i.e., Baseline 1, Baseline 2, and Core Mindfulness assessment), with a medium correlation ($r = .30$) expected between the time point measurements, required a sample size of 40 to obtain a power of .80 and a medium effect size ($f = .25$), given that alpha was set at .05. However, while MANCOVA is the most appropriate analysis to examine this data, this investigator was concerned about the potential for a violated assumption of independence (i.e., if one participant in the group influenced another participant, and thus affected her scores on the outcome measures). Therefore, a more stringent tested level of significance ($\alpha = .01$) was utilized in this study (Stevens, 2002). Using the previously described parameters with an alpha of .01, the required sample size increased to 57. As previously reported, complete data were available for eight participants in Study 1 and, under the same parameters (including $\alpha = .01$), a post hoc power analysis indicated that a sample size of eight yielded an achieved power of .04.

A second power analysis was conducted for Study 2. When there was one group (the treatment group) that had two repetitions of the outcome measures (Baseline and Core
Mindfulness assessments), and when a medium correlation \( r = .30 \) was expected between the time point measurements, a sample size of 46 was needed to obtain a power of .80 and a medium effect size \( f = .25 \), given that alpha was set at .05. Due to the same concerns about the potential for a violation of the assumption of independence, the more stringent alpha level of .01 was warranted (Stevens, 2002), which thereby increased the needed sample size to 69. As previously noted, a total sample of 38 was obtained after one year of data collection. Using the same parameters (including \( \alpha = .01 \)), a post hoc power analysis yielded an achieved power of .47 with this sample of 38 individuals.
CHAPTER 3

RESULTS

Study 1

Participants. As previously stated, Study 1 consisted of eight adolescent female students incarcerated at a juvenile correctional facility in the southeastern United States during the summer of 2008. Seven students (87.5%) identified as African American, while one student identified as Caucasian. Student ages ranged from 14 to 18 at all three time points in this study. The mean ages at Baseline 1, Baseline 2, and the Core Mindfulness assessment were 16.12 years, 16.12 years, and 16.5 years (SDs = 1.36, 1.36, and 1.60, respectively).

Study 1 students were placed at the juvenile correctional facility for several committing offenses (see Table 3). Two students (25%) were charged with violations of probation or aftercare, one (12.5%) was charged with running away, one (12.5%) was charged with assault, and the remaining four students (50%) were restaffed or transferred from another facility. The reason for “restaff” from another facility was not always available to this investigator, but typically a restaff was requested when an adolescent engaged in disruptive and/or unmanageable behavior (e.g., assaults on staff and other residents) that warranted placement in a more restrictive and secure facility.

Year in school ranged from eighth grade to college freshman ($M = 9.5$, $SD = 1.85$). Reading ability ranged from a 4.6 grade level to a 12.2 grade level ($M = 9.0$, $SD = 2.56$), and IQ scores ranged from 73 to 106 ($M = 95.25$, $SD = 11.03$). Of note, one of the students refused to complete intellectual and achievement testing during this placement at the juvenile correctional facility.
facility. However, during one of her prior placements at this facility, her tested IQ was measured using the *Wechsler Abbreviated Scale of Intelligence* (WASI), and her reading level was assessed using the *Wide Range Achievement Test: Third Edition* (WRAT3). Thus, her scores from these prior tests were included in the current analyses.

Relevant social history information was collected related to history of sexual abuse and suicidality. According to the Psychosocial Evaluations, five of the eight students (62.5%) endorsed histories of sexual abuse. Additionally, half of the students \((n = 4)\) endorsed histories of suicide attempts and/or gestures, and one individual (12.5%) reported a history of parasuicidal behavior. History of suicidal ideation was unavailable for two students (25%), but three of the remaining individuals reported past suicidal ideation (37.5%).

**Response style.** Two of the five outcome measures (i.e., BASC-2 and MASC) include response style indicators, which provided some indication about how students approached the testing. Student responses on the *F*-Index suggested that they did not try to present themselves in an overly negative manner. For instance, during both Baseline assessments on the BASC-2 SRP-A, 75% \((n = 6)\) of the students produced *F*-Index scores in the Acceptable range, while the remaining two students produced *F*-Index scores in the Caution range. No students produced *F*-Index scores in the Extreme Caution range. During the Core Mindfulness assessment, *F*-Index scores for 87.5% \((n = 7)\) of the students fell in the Acceptable range, while the eighth student’s score fell in the Caution range. Again, no students produced *F*-Index scores in the Extreme Caution range.

Additionally, the MASC includes an Inconsistency Index, which indicates whether or not students responded to similar items in a consistent manner. On the Inconsistency Index, five (62.5%), six (75%), and seven (87.5%) students provided consistent responses during the
Baseline 1, Baseline 2, and Core Mindfulness assessments, respectively. Of note, an elevation on the Inconsistency Index does not preclude interpretation of the MASC, but rather it is recommended that the test results are interpreted with caution.

**Hypothesis #1: Depression.** A MANCOVA was conducted to analyze student depression via the $T$ score from the Depression scale of the BASC-2 SRP-A, and the Depression Total Scale $T$ score of the RADS-2. Initially, intellectual functioning and history of sexual abuse were included as a covariate and an exploratory variable, respectively. The assumptions of multivariate normality and homogeneity were violated, and intellectual functioning and history of sexual abuse were not significant. Additionally, the supplemental predictor variables remained non-significant in the univariate tests, and ultimately they were removed from the model to maximize power.

An analysis of variance (ANOVA) was performed to examine self-reported depression, measured by the BASC-2 SRP-A Depression scale $T$ score. In this analysis, the assumption of homogeneity was met, and the assumption of normality was not substantially violated; therefore, the ANOVA results were interpreted. There was a non-significant medium effect of time on mean BASC-2 depression scores, $F(2, 14) = 2.411, p = .126, \eta^2_p = .256$, across the three assessments. Descriptively, though, mean depression scores slightly decreased across these three time points. The mean scores for each outcome variable in Study 1 are listed in Table 4 and presented graphically in Figure 1.

Next, an ANOVA was conducted to examine changes in the Depression Total Scale $T$ score of the RADS-2 over the course of this study. The assumption of homogeneity was met and the assumption of normality was not substantially violated. There was no significant effect of time on mean RADS-2 self-reported ratings of depression, $F(2, 14) = 1.266, p = .312, \eta^2_p = .153$. 
Visually, there was minimal change in mean RADS-2 scores from Baseline 1 to Baseline 2, and then a slight decrease in scores at the Core Mindfulness assessment.

**Hypothesis #2: Anxiety.** A MANCOVA was conducted to analyze student anxiety ratings via the BASC-2 SRP-A Anxiety scale T score, and the Total Anxiety Scale T score of the MASC. The assumptions of multivariate normality and homogeneity were violated, and the covariate and exploratory independent variable did not account for a significant amount of the variance in the dependent variables. Given the exploratory nature of this study, separate ANOVAs appeared warranted, and were performed.

The first ANOVA examined ratings from the BASC-2 SRP-A Anxiety scale T score. Although the assumption of homogeneity was satisfied, the assumption of normality was violated. However, due to the exploratory nature of this study and the robustness of ANOVA to such violations, the results were considered nonetheless. There was no significant effect of time on mean BASC-2 SRP-A Anxiety ratings, $F(2, 14) = 0.008, p = .992, \eta^2_p = .001$. This non-significance was apparent as the mean BASC-2 SRP-A Anxiety T scores were essentially identical across the three assessment time points.

A second ANOVA was performed to investigate changes in MASC Total Anxiety T scores during the course of this study, and the assumptions of homogeneity and normality were met for this test. Although it appeared to approach significance, there was a non-significant medium effect of time on mean self-reported anxiety scores on the MASC, $F(2, 14) = 2.817, p = .094, \eta^2_p = .287$, although these scores slightly decreased from the Baseline 1 to the Core Mindfulness assessment.

**Hypothesis #3: Anger.** A MANCOVA was performed to analyze anger ratings via the BASC-2 SRP-A Anger Control scale T score, and the AARS total T score. However, the
multivariate normality and homogeneity assumptions were violated, and intellectual functioning and history of sexual abuse were non-significant predictors. Considering these violations and the small sample size \( (n = 8) \), this investigator analyzed the anger dependent variables via two ANOVAs.

The first ANOVA analyzed the BASC-2 SRP-A Anger Control \( T \) score ratings across the three assessment time points and, in this model, homogeneity was met, and normality was not substantially violated. Based upon this analysis, time did not have a significant effect on mean BASC-2 SRP-A Anger Control \( T \) scores, \( F(2, 14) = .303, p = .743, \eta^2_p = .041 \). Visually, the mean anger control scores were almost identical across the three assessment time points.

The second ANOVA examined the AARS Total Anger \( T \) score from the initial Baseline to the Core Mindfulness assessment, and the assumptions of this test were met. According to this ANOVA, time did not have a significant effect on mean self-reported Total Anger \( T \) scores on the AARS, \( F(2, 14) = 1.403, p = .278, \eta^2_p = .167 \). Upon visual inspection, the mean anger scores looked like an inverted V across the three time points. Specifically, mean scores increased from Baseline 1 to Baseline 2, and then decreased at the Core Mindfulness assessment to approximately the same level as Baseline 1.

**Hypothesis #4: Suicide risk.** An ANCOVA was conducted to examine student suicide risk based on the ISO-30 raw score across the three time points. Intellectual functioning and history of sexual abuse were included in the model as covariate and exploratory variables, respectively; however, neither were significant predictors of suicide risk ratings, and therefore they were removed from the model. In the resulting ANOVA, the assumption of homogeneity was met and normality was not substantially violated. There was a non-significant medium effect of time on mean suicide risk, \( F(2, 14) = 2.495, p = .118, \eta^2_p = .263 \). Descriptively, mean suicide
risk raw scores increased slightly from Baseline 1 to Baseline 2, and then decreased at the time of the Core Mindfulness assessment.

**Difference scores.** Due to the lack of support for the hypotheses in Study 1, a closer examination into student self-report over time was examined. Difference scores for each outcome measure were computed between the two baseline assessments (i.e., Baseline 1 score minus the Baseline 2 score), and between the Baseline 2 and the Core Mindfulness assessments (i.e., Baseline 2 score minus the Core Mindfulness score). The statistical difference between the two sets of difference scores were computed via repeated measures t-tests and Wilcoxon signed-rank tests, as appropriate. The results are presented below, according to the type of psychopathology measured.

**Depression.** Difference scores were computed for the BASC-2 SRP-A Depression T scores between the two baseline assessments, and between the Baseline 2 and Core Mindfulness assessments. The assumptions of normality and equal variances were met, and thus a repeated measures t-test was performed. There was no significant difference between the mean change in BASC-2 SRP-A Depression T scores between the two baseline assessments, compared to the Baseline 2 and Core Mindfulness assessments, \( t(7) = .399, p = .702 \).

With regard to the RADS-2, difference scores were computed as previously described. The assumption of normality was met, although the assumption of equal variances was violated. However, since t-tests are robust to such violations and are considered more powerful than the nonparametric equivalent, a repeated measures t-test was performed to assess the differences in change on this measure during Study 1. There was no significant difference between the mean change in RADS-2 T scores between the two baseline assessments versus the Baseline 2 and Core Mindfulness assessments, \( t(7) = -.921, p = .388 \).
**Anxiety.** Difference scores were computed for the BASC-2 SRP-A Anxiety T scores as previously described. The assumption of normality was met, and the assumption of equal variances was violated. Regardless, a repeated measures t-test was performed due to the t-test’s robustness to this violation. There was no significant difference between the mean change in BASC-2 SRP-A Anxiety T scores between the two baseline assessments, compared to the Baseline 2 and Core Mindfulness assessments, \( t(7) = .112, p = .914 \).

Likewise, difference scores were computed for the MASC Total Anxiety Index T scores between Baseline 1 and Baseline 2, as well as between Baseline 2 and Core Mindfulness. In this instance, the assumptions of normality and equal variances were both violated. Consequently, the nonparametric equivalent of a t-test, the Wilcoxon signed-rank test, was performed. This test assumes difference scores are symmetrically distributed about the median, and this assumption was met. The median difference score between the two baseline assessments on the MASC was not significantly different from the median difference score between the Baseline 2 and Core Mindfulness assessments on this measure, \( Z = -.704, p = .482 \) using the Wilcoxon signed-rank test.

**Anger.** Difference scores were computed for the BASC-2 SRP-A Anger Control T scores as previously described. The assumption of equal variances was met, while the assumption of normality was violated. Given that t-tests are robust to a single assumption violation, a repeated measures t-test was performed to examine changes in the mean difference scores over the course of Study 1. There was no significant difference between the mean change in BASC-2 SRP-A Anger Control T scores between the two baseline assessments, compared to the Baseline 2 and Core Mindfulness assessments, \( t(7) = -.185, p = .858 \).
Difference scores were computed for the AARS Total Anger $T$ scores between the two baseline assessments, and the Baseline 2 and Core Mindfulness assessments. Normality was not substantially violated, and the assumption of equal variances was violated. As in prior analyses, the $t$-test’s robustness to a single violation did not preclude this test from being performed. Consequently, a repeated measures $t$-test was conducted to examine changes in the mean difference scores during Study 1. The mean difference in AARS Total Anger $T$ scores between the two baseline assessments was not significantly different from the mean difference in $T$ scores between the Baseline 2 and Core Mindfulness assessments, $t(7) = -1.668, p = .139$.

**Suicide risk.** Difference scores were computed for the ISO-30 raw scores, and the assumptions of normality and equal variances were both violated. Thus, a Wilcoxon signed-rank test was performed, and the assumption of symmetrically distributed difference scores about the median was met. The median difference score between the two baseline assessments on the ISO-30 was not significantly different from the median difference score between the Baseline 2 and Core Mindfulness assessments on this measure, $Z = -1.051, p = .293$ using the Wilcoxon signed-rank test.

**Study 2**

**Participants.** As previously stated, 38 adolescent females incarcerated at the same juvenile correctional facility in the southeastern United States participated in Study 2 between September 2008 and August 2009. Twenty-two students (57.9%) identified as African American, 15 students (39.5%) identified as Caucasian, and one student (2.6%) identified as Biracial (i.e., African American and Caucasian). Ages ranged from 13 to 18 at both time points in this study. The mean ages at the Baseline and Core Mindfulness assessments were 16.13 years ($SD = 1.36$) and 16.29 years ($SD = 1.18$), respectively. The most common committing offense among Study 2
students was violation of probation or aftercare (42.1%), followed by restaff from another facility (15.8%). The remaining offenses included crimes against persons (e.g., assault and robbery) and property (e.g., theft of property), as well as status charges (e.g., run away), and each offense was endorsed by three or fewer students. All of the committing offenses are listed in Table 3.

Year in school ranged from sixth grade to college freshman ($M = 9.5$, $SD = 1.57$). Reading ability ranged from a 1.7 grade level to a 13.0 grade level ($M = 7.7$, $SD = 3.10$), and IQ scores ranged from 71 to 102 ($M = 86.97$, $SD = 9.14$). Of note, one of the students completed an independent psychological assessment shortly before her placement at the juvenile correctional facility, and therefore she was not administered the standard intake battery. As such, her intellectual and reading abilities were assessed for this study via the results from the independent assessment, which consisted of the *Wechsler Intelligence Scale for Children – Fourth Edition* (WISC-IV) and the *Wide Range Achievement Test – Revised* (WRAT-R), respectively.

Relevant information was collected related to history of sexual abuse and suicidality. Fourteen of the 38 students (36.8%) endorsed histories of sexual abuse. Sexual abuse history was unavailable for one student (2.6%), while the remaining 23 students (60.5%) denied this type of abuse. Approximately one-third of the sample ($n = 13$) endorsed a history of parasuicidal behavior, while only six students (15.8%) acknowledged a history of suicide attempts and/or gestures. History of suicidal ideation was denied by the majority of students ($n = 29$, 76.3%), endorsed by six individuals (15.8%), and unavailable or unknown for the remaining three students (7.9%).

**Group participation.** On average, the 38 students completed the Baseline assessment 6.39 days ($SD = 10.41$) prior to beginning the Core Mindfulness skills training. Twenty-eight
students (73.7%) attended all eight group sessions, six students (15.8%) participated in seven sessions, and one student (2.6%) completed six sessions. The number of attended sessions was unavailable for three students (7.9%). Additionally, the Core Mindfulness assessment was completed, on average, 5.45 days ($SD = 5.63$) after the final group session. Group leader and co-leader reports on the Dialectical Behavior Therapy Skills Group Progress Summary form (Appendix D) were reviewed to determine if all of the objectives and skills for the Core Mindfulness module were taught to the students in this study. With the exception of the final group treatment for Study 2 ($n = 3$), group leaders and co-leaders reported having taught all of the required objectives and skills. The summary form was unavailable at the time of the final data collection, thereby resulting in missing data for the final three students.

**Response style.** Similar to Study 1, the majority of students did not attempt to portray themselves in a negative manner on the BASC-2 SRP-A. During the Baseline assessment, 32 (84.2%) students’ $F$-Index scores fell in the Acceptable range, four (10.5%) students’ scores fell in the Caution range, and two (5.3%) students’ scores fell in the Extreme Caution range. Likewise, during the Core Mindfulness assessment, 35 (92.1%) students’ $F$-Index scores fell in the Acceptable range, while three (7.9%) students’ scores fell in the Caution range. No students produced $F$-Index scores in the Extreme Caution range during the Core Mindfulness assessment. Moreover, all caregiver ratings on the BASC-2 PRS-A $F$-Index were considered Acceptable for both the Baseline ($n = 36$) and Core Mindfulness ($n = 38$) assessments.

**Multivariate analysis of covariance (MANCOVA).** A MANCOVA was performed to determine the effect of time on the outcome variables of depression, anxiety, anger, aggression, and suicide risk. Specifically, the dependent variables were measured via the $T$ scores from the Depression, Anxiety, and Anger Control scales of the SRP-A and the PRS-A, the $T$ score from
the Aggression scale of the PRS-A, and the raw score of the ISO-30. Intellectual functioning was included in the model as a covariate, and history of sexual abuse was tested as an exploratory variable.

With regard to testing the assumptions, the MANCOVA did not compute Box's Test of Equality of Covariance Matrices because "there are fewer than two nonsingular cell covariance matrices." Therefore, the assumption of equal covariances could not be determined. Equal variances, however, were established for this analysis. Based upon visual inspection of histograms, the assumption of multivariate normality was not substantially violated. Moreover, intellectual functioning and history of sexual abuse appeared to have significant, or near significant, relations with some, though not all, of the dependent variables. Therefore, it appeared appropriate to separate the dependent variables into distinct analyses. Thus, three MANCOVAs were performed to analyze change in participant and caregiver ratings of depression, anxiety, and anger/aggression. Due to the single measure of suicide risk, an analysis of covariance (ANCOVA) was performed to measure change in this variable. Table 5 lists the student and caregiver mean or median T scores on the outcome measures for both assessment time points, as well as the corresponding multivariate and/or univariate test statistics.

**Hypothesis #1: Depression.** A MANCOVA was performed to determine the influence of time on depression, measured via the T scores from the Depression scales of the BASC-2 SRP-A (student) and PRS-A (caregiver). Intellectual functioning and history of sexual abuse were included as covariate and exploratory independent variables, respectively. Intellectual functioning was not a significant predictor, and was removed from the model; thus, a two-way mixed design was conducted with one between-subjects factor (i.e., history of sexual abuse) and one repeated measures factor (i.e., time). The assumption of equal covariances was met and
multivariate normality was not substantially violated, thereby allowing interpretation of the MANOVA. Two students were not included in the analysis due to missing baseline scores, and one student was not included due to missing data about her history of sexual abuse. Thus, this analysis was conducted on 35 students. Considering the more stringent level of significance for this study ($\alpha = .01$) to account for possible violations of independence, time did not have a significant effect on the set of depression $T$ scores, Wilks' $\Lambda = .793$, $F(2, 32) = 4.164$, $p = .025$, $\eta^2_p = .207$. Additionally, history of sexual abuse did not account for significant differences in depression, Wilks' $\Lambda = .948$, $F(2, 32) = .874$, $p = .427$, $\eta^2_p = .052$. Finally, the interaction between time and sexual abuse did not meet the stringent significance criteria for this study, Wilks' $\Lambda = .804$, $F(2, 32) = 3.896$, $p = .031$, $\eta^2_p = .196$.

Due to the non-significant findings for the mixed design MANOVA, each dependent variable was analyzed separately, still including history of sexual abuse as an exploratory independent variable. First, a mixed design ANOVA was conducted to examine the effect of time and history of sexual abuse on student reports of depression on the BASC-2 SRP-A. History of sexual abuse was not a significant predictor, and it was removed from the model, thereby producing an ANOVA based on responses from all 38 students. The assumption of sphericity was met while the assumption of normal distribution was not substantially violated. There was a significant effect of time on student depression ratings, $F(1, 37) = 10.832$, $p = .002$, $\eta^2_p = .226$, using a Bonferroni correction. Thus, participants' self-report of depressive symptoms significantly decreased from the Baseline to the Core Mindfulness assessment (see Table 5 and Figure 2).

Next, a mixed-design ANOVA was performed to examine caregiver report of depression on the BASC-2 PRS-A across the two time points and with consideration of reported histories of
sexual abuse. Sphericity was met and normality was not substantially violated; however, sexual
abuse was not a significant predictor and it was removed from the model. A resulting ANOVA
was conducted on 36 participants due to missing PRS-A data. Sphericity and normality were met
and the ANOVA was interpreted. There was no significant effect of time on caregiver ratings of
depression, $F(1, 35) = 1.313, p = .26, \eta^2_p = .036$. Mean T scores suggest that caregiver ratings of
student depression remained virtually unchanged over the course of the study.

**Hypothesis #2: Anxiety.** A MANCOVA was performed to determine the influence of
time on anxiety, measured via the T scores from the Anxiety scales of the BASC-2 SRP-A
(student) and PRS-A (caregiver). Intellectual functioning and history of sexual abuse were
included as covariate and exploratory independent variables, respectively. In this MANCOVA,
the assumptions of homogeneity and multivariate normality were met. Neither intellectual
functioning nor sexual abuse had a significant relation with the set of dependent variables, and
time did not account for a significant amount of the variance in the set of dependent variables.
Therefore, this hypothesis was re-analyzed without the non-significant covariate and exploratory
independent variable.

A MANOVA was performed to examine anxiety ratings across the two time points.
Thirty-six students were included in this analysis (two individuals were excluded due to missing
PRS-A data). Neither Box's nor Levene's Tests were computed due to a lack of a between-
subjects factor (i.e., history of sexual abuse). Sphericity was met and multivariate normality was
considered sufficient. There was a significant effect of time on the set of dependent variables,
Wilks' $\Lambda = .753, F(2, 34) = 5.591, p = .008, \eta^2_p = .247$. Follow-up ANOVAs yielded a
significant effect of time on student self-reported symptoms of anxiety, $F(1, 35) = 11.242, p =
.002, \eta^2_p = .243$, such that student anxiety decreased from the Baseline to the Core Mindfulness
assessment (see Figure 2). There was no significant effect of time on caregiver reported symptoms of anxiety, $F(1, 35) = .077, p = .784, \eta^2_p = .002$. Caregiver ratings were virtually unchanged across the two time points. The results of this MANOVA are summarized in Table 5.

**Hypotheses #3 and #4: Anger and aggressive behavior.** A third MANCOVA was performed to determine the influence of time on anger and aggressive behavior, measured via the T scores from the Anger Control scales of the BASC-2 SRP-A (student) and PRS-A (caregiver), and the T scores from the Aggression scale of the PRS-A. As in prior analyses, intellectual functioning and history of sexual abuse were included initially in the model; however, neither were significant, and consequently each was removed from the model. Thirty-six students were included in the resulting MANOVA (two students were excluded due to missing PRS-A data). Neither Box's nor Levene's Tests were computed due to a lack of a between-subjects factor, sphericity was met, and multivariate normality was considered sufficient. Based upon the stringent significance criteria for this study ($\alpha = .01$), time did not have a significant effect on the set of dependent variables, Wilks' $\Lambda = .772$, $F(3, 33) = 3.254, p = .034, \eta^2_p = .228$.

Due to the small sample size ($n = 38$) and exploratory nature of this study, separate ANOVAs were performed to maximize power. An ANOVA was conducted to analyze student-reported levels of anger on the BASC-2 SRP-A during the Baseline and Core Mindfulness assessments. All 38 students were included in this analysis. Sphericity was met and normality was not substantially violated. Considering the Bonferroni correction on the proposed stringent alpha level (.01/3 = .003), time did not have a significant effect on student self-report of anger $F(1, 37) = 7.717, p = .009, \eta^2_p = .173$, although the mean anger T scores slightly decreased from 53.24 to 48.97 over the course of this study.
Next, an ANOVA was performed to study changes in caregiver-reported levels of anger on the BASC-2 PRS-A across the two time points. Two cases were excluded from this analysis \((n = 36)\) due to missing PRS-A data. Sphericity was met, but normality appeared to be violated. Therefore, the nonparametric equivalent of a repeated measures ANOVA, the Friedman Test, was performed to determine if there were any differences on caregiver ratings of anger over the course of the study. This test does not have any assumptions, and it compares the medians of variables, rather than the means. There was no significant difference among the median ratings of caregiver anger \(T\) scores from the Baseline to the Core Mindfulness assessment, \(\chi^2 [1] = .032, p = .857\). Descriptively, caregiver ratings on this variable were essentially identical at both time points.

Finally, an ANOVA was performed to analyze changes in caregiver-reported levels of aggression on the BASC-2 PRS-A during Study 2. As in the ANOVA for caregiver anger ratings, 36 students were included in the analysis (two cases were missing PRS-A data), sphericity was met, and the assumption of normal distribution was violated. Therefore, a Friedman Test was performed to determine if there were any differences in caregiver aggression ratings between the Baseline and Core Mindfulness assessments. There was no significant difference between the median ratings of caregiver aggression \(T\) scores, \(\chi^2 [1] = .31, p = .577\), as the \(T\) scores on this variable were similar at both time points.

**Hypothesis #5: Suicide risk.** An ANCOVA was performed to determine the effect of time on the outcome variable of suicide risk, as measured via the raw score of the ISO-30. Intellectual functioning was included in the model as a covariate, and history of sexual abuse was tested as an exploratory variable. However, intellectual functioning was removed from the model as it did not predict a significant amount of the variance in the dependent variable. Thus, a mixed
design ANOVA was performed to determine the effect of time and sexual abuse on suicide risk. Although the assumption of sphericity was met, the assumption of normality was violated. Moreover, history of sexual abuse did not meet the stringent level of significance set for this study ($\alpha = .01$). Therefore, history of sexual abuse was removed from the model, and a Friedman Test was performed to determine if there were any differences in suicide risk ratings across the two time points for the 38 students. Based on this test, there were significant differences between the median ratings of suicide risk at the Baseline and Core Mindfulness assessments, $\chi^2 [1] = 7.529, p = .006$, such that raw scores decreased over the course of the study.

**Disciplinary charges.** Frequencies were computed for specific disciplinary charges. As previously noted, all charges were assigned by cottage staff members, some of whom also rated the students’ behaviors on the BASC-2 PRS-A. Treatment staff, including DBT group leaders and co-leaders, did not assign charges for any of the students in Study 2. Charges of interest for this study included refusal of supervision (e.g., not following instructions), assault (physical, sexual, and verbal), and self-harm. Within these classifications, the 38 participants earned a grand total of 167 charges. In particular, participants earned 152 refusal of supervision charges ($M = 4.0, SD = 4.51$), 14 physical assault charges ($M = 0.37, SD = 0.85$), and one self-harm charge ($M = .03, SD = .16$). The number of refusal of supervision charges ranged from zero to 21, while the number of physical assault charges ranged from zero to four. None of the participants earned charges for verbal or sexual assault during the course of the modified Core Mindfulness skills training group.

The distribution of refusal of supervision and physical assault charges during the first and second halves of the treatment were examined. Eighty-eight refusal of supervision charges ($M = 2.32, SD = 3.19$) were obtained during the first half of the modified Core Mindfulness skills
training group, and 64 refusal of supervision charges \((M = 1.68, SD = 2.36)\) were earned during the second half of the treatment. Results of a within-subjects \(t\)-test indicated there was no significant difference between the mean refusal of supervision charges during the two halves of treatment, \(t(37) = 1.166, p = .251\). Additionally, the physical assault charges were evenly distributed between the first and second halves of the group. Specifically, the students earned seven charges during the first \((M = .18, SD = .69)\) and second \((M = .18, SD = .51)\) halves of the modified Core Mindfulness skills training group.

**Core mindfulness knowledge check.** At the time of the Core Mindfulness assessment, students provided qualitative feedback about this module, including their likes and dislikes, as well as indications about their ability to learn and/or retain the information. Thirty-six of the 38 students provided positive feedback about the Core Mindfulness group. These individuals spoke very highly about the variety of mindfulness activities that helped them learn the skills. They also described the groups as “fun,” and noted the skills were useful as they helped them avoid problematic behaviors, such as fighting. These students also offered critiques that the group lasted for too long of a period, and that the material was hard to learn or remember. All of these students provided examples and/or definitions of the skills and, for all but one of these individuals, their responses suggested they understood the material. Of note, there was only one student who provided positive feedback about the module, yet she did not seem to comprehend the skills.

Additionally, two students provided negative feedback about the group, and described it as “boring” and “uninteresting.” One of these individuals also provided positive feedback, while the other’s responses were predominantly negative. The latter individual offered minimal
responses on the Core Mindfulness knowledge check form, and she reported she did not use and could not explain several of these skills.

**Group leader and co-leader satisfaction ratings.** At the end of each module, the group leaders and co-leaders completed a brief questionnaire in which they responded to three questions on a ten-point Likert scale, which ranged from “1” to “10” (“Not at all” to “Very much,” respectively). The group leaders and co-leaders were asked to provide this feedback at eight points during the course of data collection, and a summary of these results is illustrated in Figure 3. Over the course of the data collection period, the total number of group leaders ranged from six to ten, and the number of group leaders who provided satisfaction ratings at each data collection point ranged from three to nine. The group leaders’ numerical responses were averaged based upon the number of individuals who provided feedback. According to their responses, the group leaders voiced dissatisfaction with the modified DBT program as a form of treatment ($M = 4.77$ out of ten, across the eight data collection points, excluding missing data). Likewise, group leaders did not believe the modified DBT program helped students ($M = 3.32$, excluding missing data). Finally, group leader endorsed moderate levels of enjoyment leading the modified DBT groups ($M = 4.95$, excluding missing data).
CHAPTER 4
DISCUSSION

This quasi-experimental study sought to illustrate the potential effectiveness of participation in a modified Core Mindfulness skills training group in the reduction of various mental health problems and behaviors in a sample of incarcerated adolescent females. In brief, some of the hypotheses were upheld, and significant changes in student ratings of depression, anxiety, and suicide risk were found in the second portion of this dissertation. Discussion of the study results, and possible explanations for significant and non-significant findings are provided.

Effect of Core Mindfulness on Psychopathology and Related Behaviors

Study 1 was a preliminary attempt to gauge the effect of participation in a Core Mindfulness skills training group on self-reported rates of depression, anxiety, anger, and suicidal ideation in a sample of incarcerated females. Although none of the results were statistically significant, this exploratory study produced some notable findings.

First, some of the outcome variables showed a trend in the predicted direction. Specifically, depression T scores on the RADS-2 and anger T scores on the BASC-2 SRP-A illustrated minimal change between the two baseline ratings, followed by a slight decrease at the time of the Core Mindfulness assessment. Additionally, although there was a two-point increase on mean ISO-30 raw scores from Baseline 1 to Baseline 2, there was a six-point decrease in these ratings following the Core Mindfulness treatment. These non-significant changes approximated the hypothesized change that student reports of symptoms of psychopathology would decrease subsequent to participation in the modified Core Mindfulness skills training.
group. If the effects of the group treatment contributed to these score changes, it is possible that significant results may be obtained if the study were replicated with a larger number of participants and a control group comparison.

However, it is also possible that the passage of time (independent of the treatment), other programming at the facility, or another unrelated factor resulted in this non-significant trend. In fact, the non-significant difference in score changes from Baseline 1 to Baseline 2, compared to those from Baseline 2 to Core Mindfulness, do not lend support for the effectiveness or influence of the Core Mindfulness treatment. Moreover, the gradual, downward progression of the BASC-2 SRP-A Depression scale T scores and the MASC Total Anxiety Index T scores are more suggestive that time alone produced this non-significant change, considering that the amount of score change from Baseline 2 to Core Mindfulness was not significantly greater than the amount of score change from Baseline 1 to Baseline 2. Additionally, the near identical scores on the BASC-2 Anxiety scale T scores at all three time points suggests participation in the treatment had no effect on participant ratings on this scale. Thus, based upon the limited findings from Study 1, one could argue that participation in the modified Core Mindfulness skills training did not influence the non-significant trend of decreasing RADS-2 and BASC-2 SRP-A Anger Control scale T scores, and the ISO-30 raw scores.

Second, it is worth noting that, although not statistically significant, the changes in the ISO-30 raw scores warrant clinical significance. Specifically, the mean raw scores at Baselines 1 and 2 (i.e., 27.75 and 29.75) approached the moderate risk classification range (i.e., raw scores between 30 and 44). However, the mean raw score at the Core Mindfulness assessment was 23.62, which falls more comfortably within the low risk range (i.e., less than 30). Given the importance of addressing and reducing suicidal ideation and risk among incarcerated youth,
these findings suggest that further investigation into the possible benefits of Core Mindfulness skills training deserves empirical attention.

Third, the results of the AARS T scores, which formed an inverted V across the three time points, is another noteworthy finding. Although there was a non-significant increase in anger scores from Baseline 1 to Baseline 2, the mean anger ratings decreased back to their original level at the Core Mindfulness assessment. It is possible that participation in the modified Core Mindfulness skills training group was a protective factor, which may have prevented anger levels from increasing further as the length of incarceration progressed. However, this hypothesis cannot be supported without a control group comparison and replication with a larger sample size.

Overall, the low power due to the small sample size ($n = 8$) likely prevented the detection of any present significant change in Study 1. However, this does not preclude the possibility that Core Mindfulness skills training may not have a significant impact on self-reported feelings of depression, anxiety, anger, and suicidality. Consequently, further study into the potential effects of Core Mindfulness skills training is warranted.

**Intellectual functioning and history of sexual abuse.** Study 2’s results were based on a series of separate analyses performed to investigate potential changes in student and caregiver ratings of depression, anxiety, anger, aggression, and suicide risk following completion of the Core Mindfulness group skills training. Intellectual functioning and history of sexual abuse were included in the various models, but neither accounted for significant amounts of variance in any of the dependent variables. As in Study 1, it is possible that this lack of significance is related to the low sample size, both in terms of the overall number of students in Study 2 ($n = 38$), as well as the limited number of students who endorsed sexual abuse histories ($n = 14$, or 36.8% of the
sample). Replication of this study with a sufficient number of participants to achieve the desired power would provide solid insight into whether or not this treatment’s effects vary based upon one’s sexual abuse history. Furthermore, tested intelligence ranged from borderline to average (i.e., 71 to 102), and the mean IQ score fell within the low average range ($M = 86.97, SD = 9.14$). These scores reflect a skewed sample of intellectual ability that is approaching one standard deviation lower than that of the overall, non-incarcerated population. The non-significant effect of intellectual ability suggests that students who have lower tested levels of intelligence (e.g., IQ in the 70s) received comparable effects or benefits from this treatment as students with higher tested levels of intelligence (e.g., IQ in the 90s). This bodes well for the possibility of implementing Core Mindfulness skills training in correctional settings, where potential patients’ intellectual abilities do not fall within the typical normal distribution found in the overall population.

**Student self-report.** Based upon student self-report, there were significant effects of time on depression, anxiety, and suicide risk ratings. With regard to depression, changes in student ratings met the conservative criteria of a Bonferroni correction and yielded a medium effect size ($\eta^2_p = .226$). Specifically, mean scores on the BASC-2 SRP-A Depression scale decreased from 56.34 to 49.89 over the course of the study. At first glance, this change may not appear clinically meaningful because all of these scores fall within the average range. However, this difference in scores exceeds the standard error of measurement for the BASC-2 SRP-A Depression scale (i.e., 3.3), and the mean score at the Core Mindfulness assessment falls outside the 90% confidence interval for the Baseline score on this scale (Reynolds & Kamphaus, 2004). Therefore, although the mean scores remained within the average range, the change in scores is clinically relevant because it exceeds the amount of error one would have expected from
measurement alone. This may suggest that either length of incarceration, as illustrated in Ariga et al.’s (2010) study, or participation in the Core Mindfulness skills training significantly reduced depressive symptomology, even for individuals with minimal symptoms.

A similar finding was evidenced via students’ self-reported anxiety scores. Mean student anxiety scores significantly decreased from 54.78 to 50.06 from the Baseline to the Core Mindfulness assessment, which also produced a medium effect size ($\eta^2_p = .243$). Although these mean scores were classified within the average range, the change in scores was larger than the Anxiety scale’s standard error of measurement (i.e., 3.5), thereby producing change above and beyond that expected due to measurement error. Contrary to the results on the BASC-2 SRP-A Depression scale, the change in Anxiety ratings from the Baseline to the Core Mindfulness assessment did not exceed the 90% confidence interval, though it exceeded the 68% confidence interval (Reynolds & Kamphaus, 2004). Unfortunately, the lack of documentation of longitudinal, naturalistic changes in incarcerated youth’s self-reported anxiety prevents a comparison for the participants’ changes in anxiety ratings. Of note, another important finding is that the desired effect size was achieved for both the depression and anxiety analyses, even though there were only 38 students in this study, and the power analysis indicated that 69 students were required to obtain such an effect. It is unlikely that this magnitude of change could be obtained in a sample of this size due solely to extraneous factors.

Finally, suicide risk scores significantly decreased from the Baseline to the Core Mindfulness assessments. Specifically, median scores on the ISO-30 decreased from 25.5 to 24.0, which reflected a shift toward less suicidal ideation. Notably, these median scores fall within the “Low” risk classification, which is not surprising as the majority of student’s scores fell within this categorization. However, examination of the distribution of scores reveals that the
number of students in the “High” suicide risk classification decreased from six to two individuals, and the number of students in the “Moderate” risk classification decreased from nine to seven during the two assessments. Therefore, this shift illustrates notable changes in suicidality, particularly for those individuals who initially identified as high suicide risks.

Changes in student anger ratings were not statistically significant according to the Bonferroni correction on the proposed stringent alpha level (.01/3 = .003), although they approached significance ($p = .009$). Descriptively, anger ratings decreased from the Baseline to the Core Mindfulness assessment, which suggests that significant and meaningful results may be obtained if this study is replicated with a larger sample. Moreover, since this trend is consistent with the significant changes in depression, anxiety, and suicide risk, it lends further support that participation in the modified Core Mindfulness skills training group may have contributed to the differences in student self-reports.

**Caregiver report and disciplinary charges.** In contrast to student self-reports, caregiver ratings did not yield significant differences on the outcome variables of depression, anxiety, anger, or aggression. Rather than displaying a downward trend, mean caregiver scores were virtually unchanged for depression and anxiety ratings, and median anger ratings were identical (i.e., 45.0) at both time points. Moreover, although changes in median caregiver ratings on the aggression scale demonstrate a decrease from 49.0 to 43.0, the average scores were almost exactly the same at the Baseline and Core Mindfulness assessments (i.e., 49.53 and 49.76, respectively). In conjunction with the student self-reports, these results suggest that students experienced subjective changes in their depressive and anxious symptoms following participation in the modified Core Mindfulness group, but these changes were not apparent to staff members.
**Student and group leader views on modified core mindfulness skills training.**

Overall, the vast majority of students voiced positive views of the modified Core Mindfulness skills training groups, and they appeared to have grasped at least a general understanding of the material. Although some of the students may have had excessively optimistic outlooks on the treatment and voiced overly positive feelings toward it, many students offered realistic critiques, for instance about difficulty retaining all the parts of the treatment.

The favorability of the students’ reports lies in stark contrast with the group leaders’ feedback about the overall modified DBT skills training program. Specifically, group leaders were not particularly satisfied with this program as a form of treatment, they did not believe it helped the students, and they moderately enjoyed leading these groups. However, it should be noted that the students in this study were asked solely about the Core Mindfulness module, while group leaders were asked about the entire DBT program, which includes three other skills training modules. Furthermore, group leaders were privy to an overall picture of the modified DBT program, including barriers to treatment implementation, and changes in student attitudes over the course of the treatment. One problem that may have contributed to group leaders’ frustration is the frequency of disciplinary charges. The collection of 38 students produced a total of 167 charges, the vast majority of which were for refusing supervision (e.g., not following instructions or rules, talking back, or using profanity to staff). On average, each student received four refusal of supervision charges while they participated in the modified Core Mindfulness group, which is further divided into one charge per week of the treatment. Within this context, it is arguable that group leaders, similar to caregivers who rated students’ behaviors, did not detect an objective change in behavior, despite the students’ subjective reports of improved
psychological symptoms. Given this consideration, it is reasonable to assume that the group leaders’ feedback is also based on other factors that are beyond the scope of this study.

Despite the group leaders’ views, though, it is noteworthy that student responses yielded significant, positive changes in some of the outcome variables. This may suggest that group leader feelings toward the overall treatment did not have a negative impact on the potential benefits of the treatment, at least with regard to depression, anxiety, and suicide risk. Such a finding further attests to the strength of the Core Mindfulness skills as taught in this modified DBT program.

**Limitations**

The current study presents five limitations that merit discussion. The primary limitation is the low sample size for both studies (Study 1: \( n = 8 \); Study 2: \( n = 38 \)). Although every attempt was made to obtain more participants, the previously described unforeseen factors (e.g., staff turnover and low census) prevented attainment of the desired sample size, despite active data collection for one year. The small sample size considerably impacted the potential power of the analyses (see the *Power Analysis* section of this document on page 58), which was further complicated by the potential for dependent observations, due to the group nature of the treatment. Moreover, the small sample size limited the generalizability of both studies’ results. For instance, individuals who refused to participate or who withdrew from the research may have had more severe levels of psychopathology than those who participated for the duration of the treatment. Along these lines, the second limitation is the lack of a control group in Study 2. Unfortunately, this limitation prevented the development of any conclusive findings related to participation in the Core Mindfulness skills training group for this sample.
A third limitation of this study is the modification of DBT and, thus, Core Mindfulness skills training, from the empirically supported treatment developed by Linehan (1993a) to a treatment that would address the needs of this sample, while simultaneously fitting within the rigorous confines and fiscal limitations of a correctional facility. The shortened duration and lack of individual psychotherapy and telephone consultation within this study’s procedures rendered the program as “modified” and, it could be argued, not directly comparable to that of “true” DBT populations. The modified nature of this study’s treatment program is interrelated with the fourth limitation to this study. Namely, although coaching by staff members was intended to replace the telephone consultation component of DBT, there were training delays for direct care staff. Despite efforts to procure the necessary materials required for the second-tier level of training, direct care staff did not complete the online skills training until April 2009. Thus, their ability to coach students in skill use was restricted to their knowledge of the skills from the training they had completed at that point in time (i.e., two-day training workshop, readings on the skills, and, ultimately, online skills training [Linehan, 1993b]).

Finally, the lack of an impartial rater to conduct traditional integrity checks is a limitation to the results of this study. This lack of external verification is particularly relevant in two areas. First, independent ratings of audiotapes of the Orientation and Commitment process and the Core Mindfulness skills training sessions, which would have helped to ensure treatment adherence, were unavailable. Second, there was no measure of the frequency, if any, with which direct care staff members coached students. Despite the extensive training that was provided, external checks are critical when measuring treatment adherence (Kendall et al., 2004), and the lack of such measures is a limitation of this project.

**Contributions**
Despite these limitations, this dissertation expands current knowledge and offers significant contributions to the psychological and juvenile justice fields. A unique contribution of this study is that it enhances the mindfulness-based treatment literature. The results of this study indicate that depressive and anxious symptoms and suicide risk in incarcerated adolescent females decreased over time, which may be related to participation in a modified Core Mindfulness skills training group. Although DBT has been recognized as a mindfulness-based treatment, it is possible that Linehan’s (1993a, b) Core Mindfulness skills training can exist as a stand-alone mindfulness treatment. If so, Core Mindfulness skills training may be a more feasible and cost-effective treatment option, in comparison to DBT, for some financially constrained agencies.

Along these lines, the field of DBT research also benefits from this study’s analysis of the target variables during a naturally occurring break in the therapy (i.e., at the end of the Core Mindfulness module). Concrete measures of psychological functioning after participation in a Core Mindfulness skills training group has not been implemented in prior DBT research. The examination of the sole effect of Core Mindfulness skills training has been called for by prior researchers (e.g., Williams & Swales, 2004). Even more so, during the 2008 Annual meeting of the American Psychological Association in Boston, Massachusetts, Linehan discussed the need to identify which parts of DBT work better than others, and whether or not all of the current components of DBT are needed, or if this treatment can be effective in an abbreviated format (Linehan & Neacsiu, 2008). The program implemented at this juvenile correctional facility represents an abbreviated format (i.e., individual psychotherapy was not be offered for all students, and telephone consultation was replaced with coaching from on-site staff), which allowed for some study of the effectiveness of the components that remained (i.e., Core
Mindfulness group skills training and therapist consultation team). Additionally, this study is consistent with prior DBT research that suggests modifications of this treatment may be related to promising findings with both institutional (Low et al., 2001) and adolescent populations (Nelson-Gray et al., 2006; Goldstein et al., 2007), despite small sample sizes and the lack of a control group.

Furthermore, this study contributes to the current literature on treatment options for delinquent and incarcerated adolescent females. Females have different treatment needs than males, and traditionally they have been underserved in the criminal justice system. Unfortunately, their rate of arrest has been rising (Office of Juvenile Justice and Delinquency Prevention, 1996), and there is a growing need for research on feasible and appropriate forms of treatment for this population. This study demonstrated that a modified Core Mindfulness program can be implemented in an adolescent correctional facility, and it may meet the treatment needs for a sample of incarcerated adolescent females in terms of symptom reduction for depression, anxiety, and suicidal ideation.

With regard to suicidality, high percentages of students at this juvenile correctional facility have endorsed self-harm and suicidal ideation (50%) and previous suicide attempts (33%), which is consistent with reports from other correctional samples (Abrantes et al., 2005), and suggests a strong need for treatment to target these variables. Within the combined samples for both studies (N = 46), nine students (19.6%) endorsed prior suicidal ideation, ten students (21.7%) reported past suicide attempts and/or gestures, and 14 students (30.4%) acknowledged a history of parasuicidal behavior. Although these present frequencies are not as severe as past records, the severity of suicide risk (i.e., 15.8% of students endorsed “High” suicide risk ratings) suggests this remains a concern. Moreover, self-harm behaviors and suicide attempts can have
contagious effects for adolescents in general (Gould, Greenberg, Velting, & Shaffer, 2003), and the close quarters of a correctional setting stand to exacerbate this effect. Such a contagion effect was experienced at this juvenile correctional facility in August 2008, which resulted in hospitalizations for two students, as well as engagement in self-harm behaviors among students who did not typically display this type of conduct. Clearly, there has been a need at this facility, as well as other adolescent correctional facilities, for a treatment that teaches alternatives to self-harm behaviors, without reinforcing such behaviors when they are committed. This study’s results indicated that the modified Core Mindfulness skills training may have accounted for significant decreases in suicide risk ratings. In fact, the number of “High” risk ratings decreased from six to two, or 15.8% to 5.3% of the Study 2 students, following this treatment. This substantial change lends further support to the value of these findings. Changes in suicidal and/or parasuicidal behavior were unavailable as study participants did not engage in such behaviors during the course of the study. This may be a reflection of students’ effective coping skills independent of Core Mindfulness, their housing status in a secure facility that offers intensive supervision, or another extraneous factor. Future research with a larger sample size and greater variability in self-harm would likely indicate the effect of modified Core Mindfulness skills training on suicidal and parasuicidal behaviors.

In addition to applying some of the components of DBT to an understudied population, this study helped demonstrate the practicality and challenges associated with implementation of a modified Core Mindfulness skills training program facility-wide within a traditional juvenile correctional facility. Although not easy, this treatment was implemented 18 months after its initial inception, and is currently still in operation, one year after cessation of the data collection for this study. Limited research has been conducted on the application of mindfulness-based
treatments within adult prisons (Eccleston & Sorbello, 2002; Nee & Farman, 2005; Robins & Chapman, 2004; Samuelson et al., 2007) and only one study has examined the effectiveness of DBT with an incarcerated, adolescent female population (Trupin et al., 2002). Despite the lack of research conducted thus far, the structured nature of correctional facilities appears ideal for implementing a comprehensive treatment program, such as DBT. For instance, it allows for constant monitoring of behavior, thereby providing ample opportunities for staff to reinforce skills use. Participants would also be able to observe staff and other participants, or inmates, in their living environment using the same skills; this repeated exposure would likely contribute to increased use of the skills. Although there is no verification of staff and peer skills coaching, the nature of the treatment milieu at least afforded this opportunity.

Unfortunately, the financial and time-related costs of implementing DBT may deter some administrations from pursuing this as a treatment option. However, a short-term, more cost-effective Core Mindfulness skills training group may provide a viable alternative. This dissertation offers preliminary findings that it is possible to implement a modified Core Mindfulness skills training program in an adolescent correctional setting, and it may have the potential to reduce self-reported symptoms of depression, anxiety, and suicidal ideation. Consequently, the results from this study could be useful in potentially developing guidelines for a standardized process of implementing Core Mindfulness groups within adolescent correctional facilities, and perhaps ultimately, embarking on the same process for an entire DBT program. Having such guidelines would increase the likelihood that Core Mindfulness groups and DBT would be implemented in more correctional facilities, and that more research using treatment and control groups would be conducted on its effectiveness.
Finally, this study fulfilled a service role within the community as the governing state agency requested assistance monitoring the effectiveness of the modified DBT program within this juvenile correctional facility. While this program was designed to meet clear needs within the facility (e.g., reducing self-harm behaviors), there are other common facility problems that may also be addressed. For instance, the Core Mindfulness skills also have the potential to assist students during the transitional period surrounding their release. It is not uncommon for students, when faced with an upcoming release date, to engage in disruptive behaviors (e.g., fighting, throwing objects, and acting out) in an attempt to postpone their release. These students may have ambivalent feelings about returning to their home environment and, although they may not admit this, they seem to benefit from or at least find comfort in the structure and consistency provided within this facility (e.g., daily schedules, structured activities, and consistent adult role models). The significant reductions in depressive, anxious, and suicidal symptoms, as well as students’ positive feedback about the treatment suggest that Core Mindfulness skills can ease the transition to release, as well as other behavioral problems during their incarceration.

Barriers to Success

Based upon this investigator’s observations and student and group leader feedback throughout the course of this study, the following barriers to the most effective implementation of the Core Mindfulness skills training groups are discussed as follows.

1. **Lack of commitment to treatment.** A significant minority of the students did not appear to be committed to full engagement in the overall modified DBT treatment program. These students were disruptive and may have distracted other students who were interested in learning. Consequently, group leaders had to spend a considerable amount of group time addressing behavior problems, which reduced the amount of time available to
teach the DBT skills. In an outpatient setting, these individuals would not be enrolled in a DBT group until they demonstrated full commitment.

2. **Difficulty understanding the material.** Students voiced difficulty understanding some of the terms used in the treatment (e.g., “precipitating event”). Prior to their placement at this juvenile correctional facility, many students did not attend school regularly or were out of school for long periods of time. Even though the Core Mindfulness groups used handouts that were adapted for outpatient adolescents, many of these terms were still too advanced for these students.

3. **Core mindfulness skills are limited to the groups.** After students learned the skills, there was no indication, other than their self-report, that they practiced the skills outside of the group. The most consistent exposure students had to the skills outside of group was their homework, which was not always completed or done correctly. As the students were typically not exposed to Core Mindfulness skills outside of the group setting, it was less likely for them to use the skills in their daily activities.

4. **Lack of rewards for participation or using skills.** When the modified DBT program was initially started, students were informed about a points system and were told that they would earn privileges for their participation and skills use (e.g., pizza party, an additional phone call, etc.). However, the points system was never implemented and students did not receive these rewards. During the course of this study, there were some students who had been at the facility since the modified DBT program was implemented and others who had been released and subsequently re-admitted to the juvenile correctional facility. These individuals informed other students about the lack of rewards, which discredited the treatment program.
5. **Logistical problems.** The Intensive Consultation Team and group leaders made every effort to have students attend group in their assigned cottage. However, this was not always possible and periodically students were assigned to a group in another cottage (e.g., to equally distribute group size, due to problems with other students, etc.). Because students came to group from other buildings, it was difficult to start group on time. When group leaders started on time, late arrivals disrupted the group and missed material covered at the beginning of the session. Additionally, at times groups were interrupted or started late due to non-emergency reasons (e.g., dinner and medication calls during group, instead of afterwards), which gave the appearance that the DBT groups were unimportant.

6. **Group leader and co-leader dissatisfaction.** Overall, the DBT group leaders and co-leaders did not appear particularly satisfied with the treatment at this facility. They endorsed low to moderate levels of satisfaction with the modified DBT program, they did not believe the DBT program helped the students, and they moderately enjoyed leading these groups. Although the majority of students provided positive feedback about the Core Mindfulness skills training, the treatment professionals’ dissatisfaction warrants concern and attention. Such low levels of satisfaction suggest a greater underlying issue, and may be related to the staff turnover which occurred during the course of this study.

**Recommendations**

Recommendations to improve the modified Core Mindfulness skills training groups at the juvenile correctional facility are provided as follows.

1. **Re-visit the commitment process.** It is possible that the low commitment to the overall modified DBT program was due to a lack of understanding or appreciation for the
group’s requirements. Then, after students started the group, their behavior may have become disruptive for a variety of reasons (e.g., having a bad day, frustration with having to do work in group, etc.). Whenever a student’s commitment to the group appears to decrease (e.g., student repeatedly engages in disruptive behaviors in group), it is recommended that the group leaders meet with the student to re-evaluate her commitment. This treatment is very complex and in-depth and it requires considerable client investment in order to be helpful. It is not for everyone and if a student is not prepared to make this investment, then another form of treatment would likely be more suitable for her.

2. **Adapt terms and hand-outs for incarcerated adolescents.** It is recommended that the terms used in the Core Mindfulness hand-outs are adapted to be more appropriate for the students at this juvenile correctional facility. However, the adaptation of terms and hand-outs is a very lengthy and time-consuming task. It is not something that can be done in a short period. It may be beneficial to consult with Behavioral Tech, LLC to determine if hand-outs with lower required reading levels already exist and, if so, how they can be obtained.

3. **Expand the presence of DBT skills at the juvenile correctional facility.** It is strongly recommended that everyone (e.g., administration, school personnel, off-site advocates) affiliated with this juvenile correctional facility receive some level of training in the DBT skills, particularly the Core Mindfulness skills. In order to increase the likelihood of students using these skills, they need to be immersed in them and be reminded about them from multiple people in multiple areas of the facility. If these skills are not reinforced repeatedly, students are not likely to use them. Additionally, it is
recommended that all front-line staff are trained in the Core Mindfulness skills so they
can assist in leading groups and coach students to use the skills in the cottages. On- and
off-site members of the governing agency’s administration and school personnel who
interact with the students are also recommended to be trained in these skills, and actively
encourage students to use them. Moreover, it is recommended that all of these individuals
become knowledgeable about Chain Analysis so they can prompt students to chain their
behavior (e.g., fights and refusing to follow instructions).

4. **Add rewards to the overall DBT program.** It is recommended that the governing state
agency provide small, tangible rewards (e.g., snacks) to be added into the Core
Mindfulness groups at this juvenile correctional facility. In traditional Core Mindfulness
groups, a snack (e.g., fruit) is provided midway through each group skills training
session. In the past, group leaders have provided small rewards (e.g., snacks, prizes) at
their personal expense. It is recommended that the governing state agency provide a
budget for these rewards in order to (a) add credibility to the treatment program as this
was indicated in the initial proposal, (b) be consistent with traditional group practices,
and (c) engage students in the groups.

5. **Address logistical issues.** It is recommended that the Core Mindfulness skills group be
set in a firm time that can only be interrupted for emergencies. Additionally, if students
attend group in another cottage, it is recommended that they are sent to the appropriate
cottage approximately five minutes before group time. This will assist with prompt starts
for group.

6. **Increase group leader and co-leader satisfaction.** Group leader and co-leader
satisfaction would likely be improved via implementation of the previous five
recommendations, particularly the utilization of cottage staff members to help lead groups and provide on-site skills coaching. Such assistance would help reduce the group leaders and co-leaders’ workload, which also includes extensive case management responsibilities, as well as promote the treatment as a facility-wide program. Moreover, the group leaders and co-leaders have received intensive training in DBT, and have committed to providing this treatment to these youth. They have extensive knowledge about this complicated treatment, and can offer valuable insights to improve its implementation at this facility. Thus, it is recommended the governing state agency consult with the group leaders and co-leaders to adapt this program for optimal implementation within this juvenile correctional facility. Consideration and incorporation of the group leaders’ and co-leaders’ feedback may also help increase their satisfaction with the treatment program, and may help prevent or reduce future staff turnover.

**Future Directions**

The results of this study illustrated that a modified Core Mindfulness skills training group can be implemented in an adolescent correctional facility, and may yield favorable reductions in self-reported depression, anxiety, and suicidal ideation. Replication of this study is warranted, but with specific modifications. Ideally, a randomized clinical trial would be conducted to compare Core Mindfulness skills training, in its unaltered state, to treatment-as-usual, using a sample size that will obtain the desired power (i.e., .80) at a conservative level of significance (i.e., \( \alpha = .01 \)). Treatment fidelity would be established via rated audiotapes of the orientation and commitment process, as well as group sessions. Additionally, all involved staff members would have received their scheduled level of training prior to treatment implementation, and on-site coaching, homework, and diary cards would be used to monitor progress. Realistically, it is
unlikely that such a study could be undertaken without substantial external funding. As such, if one were to expand upon the present study, attainment of the desired sample size (i.e., 69 participants for the present design) would be the initial step. Moreover, the introduction of traditional integrity checks would also be paramount. Neither positive nor negative results can be attributed to a treatment if it was never adequately implemented.

Additional future studies could analyze the original proposal for this dissertation, namely an effectiveness study of the entire, modified 16-week DBT program. As noted above, obtaining the desired sample size would be critical in this process. Despite the prevalence of modified DBT programs used with adolescents for various reasons and in a variety of settings, the majority of research on this treatment has been conducted with small samples and without a control group. A randomized clinical trial has yet to be implemented with this population, and the direction of this research is contingent on such forward progress. Moreover, a randomized clinical trial would also help lay the groundwork for future prevention research and treatment studies with incarcerated adolescents.

In sum, the current study found that students reported significantly lower levels of depression, anxiety, and suicidality after completion of a modified Core Mindfulness skills training group. These effects were found even though staff members were not fully trained at the start of treatment, and the group leaders were dissatisfied with certain aspects of the overall treatment program. Moreover, these findings were as strong as would have been expected with a considerably larger sample size. Thus, given all of these considerations, it appears that modified Core Mindfulness skills training has the potential to be a viable treatment for depression, anxiety, and suicidality in incarcerated adolescent females.
REFERENCES


### TABLES & FIGURES

Table 1

*Major Offenses from the Correctional Facility’s Student Handbook*

<table>
<thead>
<tr>
<th>Major Offense</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Escape</td>
<td>Student leaves or attempts to leave facility without permission; Student leaves or attempts to leave the group without staff permission when on any off grounds activity</td>
</tr>
<tr>
<td>AWOL</td>
<td>Student does not return from off grounds passes on time</td>
</tr>
<tr>
<td>AWOL – Late from Pass</td>
<td>Student is late from pass (by bus or car)</td>
</tr>
<tr>
<td>Out of Assigned Area</td>
<td>Anytime a student leaves the classroom or school without permission; Student is out of assigned areas of the cottage or facility without permission</td>
</tr>
<tr>
<td>Assault – Physical &amp; Sexual</td>
<td>Attempted or actual physical contact by a student to do bodily or psychological harm, which may result in injury to staff or students; Physical assault also applies to assaultive sexual behavior</td>
</tr>
<tr>
<td>Safety Violations</td>
<td>Failure to adhere to written and/or verbal rules of safety which endanger the life of the student and/or others</td>
</tr>
<tr>
<td>Major Offense</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Possession of Weapons</td>
<td>Having items which can be used for weapons or escape (e.g., pipes, knives, sharp objects, filed down objects, chair legs, clubs, razor blades, tools, any dangerous instrument)</td>
</tr>
<tr>
<td>Substance Abuse</td>
<td>Using or having in her possession any type of unauthorized substance that can cause any kind of behavioral change (e.g., illegal drugs, prescription or non-prescription drugs, toxic magic markers, liquid paper, gas, items containing alcohol, aerosols, toxic glue, possession of tobacco products)</td>
</tr>
<tr>
<td>Theft of Property</td>
<td>Taking or possession of property of another without permission or right</td>
</tr>
<tr>
<td>Vandalism</td>
<td>Destruction of or damage to any agency property or the personal property of another student or staff</td>
</tr>
<tr>
<td>Inappropriate Sexual</td>
<td>Any type of sexual contact (e.g., exhibitionism, touching another in a sexual manner, lewd or obscene remarks, writings, drawings, gestures, letters, etc.)</td>
</tr>
<tr>
<td>Conduct</td>
<td></td>
</tr>
<tr>
<td>Verbal Assault</td>
<td>Any verbalized threat to do harm, intimidation, and/or suggested sexual assault which puts a person in fear of bodily harm</td>
</tr>
<tr>
<td>Major Offense</td>
<td>Description</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Self Harm</td>
<td>Student intentionally harms or allows parts of her body to be harmed (e.g., self-piercing of ears, nose, or other parts of the body and self-tattooing); Student aids a person in self-harm; Student refuses to take prescribed medications and/or follow medical instructions</td>
</tr>
</tbody>
</table>
Table 2

*Minor Offenses from the Correctional Facility’s Student Handbook*

<table>
<thead>
<tr>
<th>Minor Offense</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refusing Supervision</td>
<td>Student chooses not to participate in assigned program area;</td>
</tr>
<tr>
<td></td>
<td>Student chooses not to follow staff instructions;</td>
</tr>
<tr>
<td></td>
<td>Student chooses not to clean room;</td>
</tr>
<tr>
<td></td>
<td>Student chooses to borrow or loan clothing;</td>
</tr>
<tr>
<td></td>
<td>Student chooses to horseplay;</td>
</tr>
<tr>
<td></td>
<td>Student chooses to pass things through grills, windows, doors;</td>
</tr>
<tr>
<td></td>
<td>Student chooses not to ask permission to go to bathroom;</td>
</tr>
<tr>
<td></td>
<td>Student chooses to play staff against staff;</td>
</tr>
<tr>
<td></td>
<td>Student chooses to visit another student’s room or go to other parts of building without permission;</td>
</tr>
<tr>
<td></td>
<td>Student chooses to have contraband in her possession</td>
</tr>
<tr>
<td>Violation of Dress Code</td>
<td>Failure to follow code and/or the wearing of clothing which is not appropriate to the situation or location</td>
</tr>
<tr>
<td>Minor Offense</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Gambling/Bartering/Selling</td>
<td>Betting or wagering with money or goods, and buying, selling, or exchanging property or personal possessions, excluding basic needs; Gambling, bartering, and/or selling of anything relating to the basic needs, such as food, sleep, clothing, and shelter, is a more serious offense</td>
</tr>
</tbody>
</table>
Table 3

*Primary Committing Offenses*

<table>
<thead>
<tr>
<th>Offense</th>
<th>Study 1</th>
<th>Study 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n$ (%)</td>
<td>$n$ (%)</td>
</tr>
<tr>
<td>Violation of probation/aftercare</td>
<td>2 (25.0%)</td>
<td>16 (42.1%)</td>
</tr>
<tr>
<td>Restaff</td>
<td>4 (50.0%)</td>
<td>6 (15.8%)</td>
</tr>
<tr>
<td>Assault/Domestic violence</td>
<td>1 (12.5%)</td>
<td>3 (7.9%)</td>
</tr>
<tr>
<td>Runaway</td>
<td>1 (12.5%)</td>
<td>2 (5.3%)</td>
</tr>
<tr>
<td>Sexual offense</td>
<td>-----</td>
<td>2 (5.3%)</td>
</tr>
<tr>
<td>Robbery/ Burglary</td>
<td>-----</td>
<td>2 (5.3%)</td>
</tr>
<tr>
<td>Theft of property</td>
<td>-----</td>
<td>2 (5.3%)</td>
</tr>
<tr>
<td>Receiving stolen property</td>
<td>-----</td>
<td>1 (2.6%)</td>
</tr>
<tr>
<td>Possess controlled substance</td>
<td>-----</td>
<td>1 (2.6%)</td>
</tr>
<tr>
<td>Criminal mischief</td>
<td>-----</td>
<td>1 (2.6%)</td>
</tr>
<tr>
<td>Harassment</td>
<td>-----</td>
<td>1 (2.6%)</td>
</tr>
<tr>
<td>Escape</td>
<td>-----</td>
<td>1 (2.6%)</td>
</tr>
</tbody>
</table>
Table 4

Study 1: Student Mean Scores on Dependent Measures at Baseline 1, Baseline 2, and Core Mindfulness Assessments (n = 8)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Baseline 1 M (SD)</th>
<th>Baseline 2 M (SD)</th>
<th>Core Mindfulness M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depressiona</td>
<td>58.62 (8.67)</td>
<td>55.38 (8.37)</td>
<td>53.50 (9.65)</td>
</tr>
<tr>
<td>RADS-2</td>
<td>58.88 (13.13)</td>
<td>59.37 (14.51)</td>
<td>54.88 (11.29)</td>
</tr>
<tr>
<td>Anxiety</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxietya</td>
<td>47.62 (10.82)</td>
<td>47.38 (10.98)</td>
<td>47.62 (11.14)</td>
</tr>
<tr>
<td>MASC</td>
<td>44.12 (11.75)</td>
<td>42.38 (12.67)</td>
<td>38.25 (10.69)</td>
</tr>
<tr>
<td>Anger</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anger Controla</td>
<td>58.62 (11.60)</td>
<td>58.12 (7.51)</td>
<td>56.88 (9.37)</td>
</tr>
<tr>
<td>AARS</td>
<td>60.62 (8.60)</td>
<td>65.62 (13.31)</td>
<td>60.00 (13.33)</td>
</tr>
<tr>
<td>Suicide risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISO-30</td>
<td>27.75 (14.26)</td>
<td>29.75 (19.46)</td>
<td>23.62 (13.04)</td>
</tr>
</tbody>
</table>

aSubscale on the BASC-2 SRP-A.
### Table 5

**Study 2: Student and Caregiver Mean or Median Scores on Dependent Measures and Corresponding Test Results**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Measure</th>
<th>n</th>
<th>Baseline $M$ (SD)</th>
<th>Core Mindfulness $M$ (SD)</th>
<th>MANOVA &amp; ANOVA Results</th>
<th>Friedman Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$\Lambda$ $F$ $df$ $p$</td>
<td>$\eta^2_p$ $\chi^2$ $df$ $p$</td>
</tr>
<tr>
<td>Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>--</td>
<td>10.832 1, 37 .002** .226</td>
</tr>
<tr>
<td>SRP-A</td>
<td>38</td>
<td>56.34 (13.05)</td>
<td>49.89 (9.71)</td>
<td>--</td>
<td>5.591 2, 34 .008* .247</td>
<td></td>
</tr>
<tr>
<td>PRS-A</td>
<td>36</td>
<td>45.28 (5.50)</td>
<td>46.28 (7.04)</td>
<td>--</td>
<td>1.313 1, 35 .260 .036</td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>--</td>
<td>11.242 1, 35 .002* .243</td>
</tr>
<tr>
<td>SRP-A</td>
<td>36</td>
<td>54.78 (13.15)</td>
<td>50.06 (11.30)</td>
<td>--</td>
<td>0.032 1 .857</td>
<td></td>
</tr>
<tr>
<td>PRS-A</td>
<td>36</td>
<td>42.11 (6.16)</td>
<td>42.50 (9.10)</td>
<td>--</td>
<td>0.310 1 .577</td>
<td></td>
</tr>
<tr>
<td>Anger Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>--</td>
<td>7.717 1, 37 .009 .173</td>
</tr>
<tr>
<td>SRP-A</td>
<td>38</td>
<td>53.24 (12.82)</td>
<td>48.97 (10.14)</td>
<td>--</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note.** -- = Not applicable.  
*Significant at $\alpha = .01$. **Significant using a Bonferroni correction (.01/2 = .005).
Figure 1

Study 1: Student Mean Scores on Dependent Measures at Baseline 1, Baseline 2, and Core Mindfulness Assessments
Figure 2

*Study 2: Student Mean Scores on BASC-2 SRP-A Depression and Anxiety Scales at Baseline and Core Mindfulness Assessments*
Figure 3

Study 2: Group Leader and Co-leader Feedback on the Modified DBT Program

Note. Group leaders and co-leaders rated their level of agreement on a scale of 1 (Not at all) to 10 (Very much).
APPENDIX A

DESCRIPTION OF CORE MINDFULNESS SKILLS

The Core Mindfulness module teaches participants how to balance emotional and logical thinking and it orients them to the meditative aspect of DBT. It targets self-dysregulation (e.g., identity confusion and disconnection from the self) and it serves as a building block for the other skills modules. During this module, participants learn about the different frames of mind they can experience (e.g., reasonable and emotional) and they are taught specific skills to keep themselves focused on the present moment. In particular, participants are taught to use their “wise mind,” which incorporates emotion-driven and logic-driven thoughts so they can act in ways that enable them to have a life worth living. The following Core Mindfulness skills are detailed in Linehan’s (1993b) Skills Training Manual for Treating Borderline Personality Disorder.

I. “What” skills: teach individuals to be aware of themselves and their behavior
   a. Observe: awareness of one’s experiences, pay attention to experiences without trying to label or manipulate them
   b. Describe: label one’s experiences and observations as matter-of-fact statements about the experience
   c. Participate: fully engage in an activity or experience, refrain from being self-conscious, view yourself, your environment, and your experience as a single entity

II. “How” skills: teach the manner in which individuals should use their “what” skills
   a. Non-judgmentally: refrain from using statements of worth
   b. One-mindfully: focus attention on one activity or experience at a time
   c. Effectively: engage in the behaviors needed to meet one’s goals, rather than relying on other methods that are not efficient
APPENDIX B

INFORMED CONSENT/ASSENT FOR PARTICIPATION IN DBT RESEARCH PROJECT

Title of Research Project: Treatment Outcome Study of Dialectical Behavior Therapy in Youthful Offenders

Primary Investigator: Raymond O. Sumrall, Youth Services Institute

While you are at this facility, you will be participating in the treatment program Dialectical Behavior Therapy, also called DBT. DBT teaches teenagers skills to help them get along with others. We are doing a study to see how DBT helps teenagers who are in the juvenile justice system. Dr. Raymond O. Sumrall is in charge of this study. He works at The University of Alabama.

We would like your permission to use your information in this study. This information will be used to
- improve treatment for teenagers in the legal system,
- learn how to help teenagers at this facility with services and treatment, and
- help stop re-offending when these teenagers go back to their neighborhoods.

As part of DBT, you will answer a set of questions about how you think and feel. Usually, it takes 30-45 minutes to answer these questions. We will ask you to answer these questions once a month and right before you leave this facility. You do not have to let your information be used in this study. If you let us use your information, you will help us
- learn how DBT helps teenagers deal with many types of problems, and
- learn if DBT will help other teenagers who are in the juvenile justice system.

Then, we can share this information with other people who work with teenagers in the juvenile justice system.

If you agree to be in this study, your name will be kept separate from your answers when we look at the data. This means that no one will know what you said or wrote in your answers when we look at the final results. You do not have to be in this study if you do not want to do so. Your relationship with this juvenile correctional facility, its governing state agency, and The University of Alabama will not change if you decide to be in this study or not. If you decide later that you do not want to be in the study, you can stop at any time at no penalty to you. The data collected will remain in the database unless you request that it be removed.
If you tell us that you have thought about or have actually harmed yourself or someone else, we have to tell the Facility Psychologist, or his or her designee. This is agency standard procedure.

Please ask any questions that you have now. If you have any questions later, you can
- ask the Facility Psychologist,
- ask Dr. Sumrall (205-348-3922 or rsumrall@sw.ua.edu), or
- ask Dr. Sumrall by mail (The School of Social Work, The University of Alabama, Box 870314, Tuscaloosa, Alabama, 35487).

If you have any questions about your rights for being in this study, you can
- ask the Facility Psychologist to reach Ms. Carpentato Myles, The University of Alabama Research Compliance Officer (205-348-5746), or
- ask Ms. Myles by mail (The Office of Research Compliance, The University of Alabama, Box 870104, Tuscaloosa, Alabama, 35487).

PLEASE CHECK ONE OF THE BOXES BELOW TO SHOW IF YOU DO OR DO NOT WANT TO BE IN THIS STUDY. YOUR SIGNATURE SHOWS THAT YOU UNDERSTAND THIS INFORMED CONSENT.

☐ I WANT MY INFORMATION TO BE USED IN THIS STUDY.

☐ I DO NOT WANT MY INFORMATION TO BE USED IN THIS STUDY.

_________________________________  ________________________
Participant Signature             Date

_________________________________  ________________________
Witness Signature                 Date

_________________________________  ________________________
Legal Guardian Signature          Date
The mindfulness exercise that I like the most is ___________________.
I liked it because
__________________________________________________________
__________________________________________________________.

One time that I used my wise mind was when I____________________
__________________________________________________________.

Examples of when I used these mindfulness skills are:
  Observe ________________________________________________
  Describe _______________________________________________
  Participate _________________
  Don’t judge _____________________________________________
  Focus on one thing _______________________________________
  Do what works __________________________________________

What I like the most about mindfulness skills is ______________________
______________________________________________________________.

What I like the least about mindfulness skills is ______________________
______________________________________________________________.
APPENDIX D

DBT SKILLS GROUP PROGRESS SUMMARY FORM

DIALECTICAL BEHAVIOR THERAPY
SKILLS GROUP PROGRESS SUMMARY

<table>
<thead>
<tr>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student:</td>
</tr>
<tr>
<td>Case Manager:</td>
</tr>
</tbody>
</table>

**Module:**
- [ ] Core Mindfulness
- [ ] Distress Tolerance
- [ ] Interpersonal Effectiveness
- [ ] Emotion Regulation

**Attendance:**
- [ ] Unsatisfactory
- [ ] Satisfactory
- [ ] Excellent

**Participation:**
- [ ] Unsatisfactory
- [ ] Satisfactory
- [ ] Excellent

**Willingness to Learn:**
- [ ] Unsatisfactory
- [ ] Satisfactory
- [ ] Excellent

**Attitude:**
- [ ] Unsatisfactory
- [ ] Satisfactory
- [ ] Excellent

**Objectives Addressed/Skills Learned:**

<table>
<thead>
<tr>
<th>Mindfulness</th>
<th>Distress Tolerance</th>
<th>Interpersonal Effectiveness</th>
<th>Emotion Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ] Theory/Assumptions</td>
<td>[ ] ACCEPTS Self-soothe Pros and cons Radical acceptance</td>
<td>[ ] DEAR MAN GIVE FAST Worry thoughts</td>
<td>[ ] Identify/label emotions PLEASE MASTER</td>
</tr>
<tr>
<td>[ ] Wise Mind</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>[ ] What Skills</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>[ ] How Skills</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>
Summary of Progress:
[YOUTH] was given a rate of [EXCELLENT] for Core Mindfulness Skills groups. She showed a [willingness to learn] and [completed all written/homework assignments] during group. She would [volunteer to read and share her answers during group]. She also showed a change in attitude since the first session.

Facilitator

Co-facilitator
APPENDIX E

GROUP LEADER AND CO-LEADER SATISFACTION RATINGS

Team ___

Please circle the number that best describes your feelings and return this to the Assessment Center mailbox.

Thank you for your help!
Emily

1. How satisfied are you with DBT as a form of treatment?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not at All</td>
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2. How well do you think DBT is helping the students?

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3. How much do you like leading DBT skills groups?

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