Project SOARing: The Impact of School-Based DBT Skills on Depression and Anxiety

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Abstract

Depression and anxiety disorders present significant challenges to adolescents' psychological, physical, social, and academic wellbeing. Young people from disadvantaged backgrounds are more likely to experience internalizing problems due to the chronic stress and emotion regulation difficulties associated with poverty-related risk-factors. Results from previous trials indicate that school-based programs are effective for the prevention and early intervention of depression and anxiety symptoms. Dialectical Behavior Therapy (DBT) is an evidence-based treatment that emphasizes acceptance and change strategies to facilitate development of four core skills: mindfulness, emotion regulation, interpersonal effectiveness, and distress tolerance. Although DBT skills have been adapted for use with adolescents to treat a variety of mental health problems, their effectiveness has not been sufficiently investigated in a school-setting. The purpose of this study is to assess the effectiveness of a school-based, DBT skills intervention for the early intervention of depression and anxiety symptoms in a diverse sample of 76 at-risk adolescents (59.2% female, 82.9% Hispanic/Latino) aged 15-18 attending a continuation high school. It was hypothesized that pre-post assessment comparisons would demonstrate (1) improvements in core skills and internalizing symptoms and that (2) increases in core skills would predict improvements in internalizing symptoms. Results from paired *t*-tests indicate a positive trend in improved DBT skills and internalizing outcomes following the intervention (ps < .05). Further, results of hierarchical multiple linear regressions indicated that increases in emotion regulation and interpersonal effectiveness predicted improvements in internalizing symptoms (ps < .05). These promising findings support the use of school-based DBT interventions to improve psychosocial outcomes in at-risk adolescents.

Keywords: school-based, dialectical behavior therapy, adolescents, depression, anxiety

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Depression and anxiety are among the most prevalent psychiatric disorders in youth (Birmaher et al., 1996; Cartwright-Hatton et al., 2004; Klemanski et al., 2017). The National Comorbidity Survey Adolescent Supplement (NCS-A) determined that 11.7% of adolescents aged 13-18 had at one point received a diagnosis of depression, and that 31.9% had met criteria for an anxiety disorder (Merikangas et al., 2010). Results from other national surveys and metaanalyses suggest a broader lifetime incidence rate, with Major Depressive Disorder (MDD) in adolescents ranging from 4.0% to 11.7% (Birmaher et al., 1996; Klemanski et al., 2017; Lemstra et al., 2008; Merikangas et al., 2009; Perou et al., 2013) and the prevalence of adolescent anxiety disorders ranging from 8% to 32.5% (Kessler, 2017; Kessler et al., 2012; Lemstra et al., 2008; Merikangas et al., 2009). Prior research suggests that an even greater number of adolescents may experience subthreshold symptoms of anxiety and depression (Lemstra et al., 2008; Merikangas et al., 2009), and that these individuals might be at elevated risk for clinical disorders (Fergusson et al., 2005). The presentation of MDD in adolescents is similar to that of adults; however, depressed mood may express as irritability in youth, allowing for irritability to count as a symptom in place of depressed mood for diagnostic purposes, according to the American Psychiatric Association (2022). Youth anxiety disorders, including generalized anxiety disorder, separation anxiety disorder, social anxiety disorder, and panic disorder, are associated with chronic distress and impaired functioning also characteristic of adult anxiety, although young people with anxiety may present with increased somatic complaints as compared to adults (Ginsburg et al., 2006). Children and adolescents that experience depression or anxiety have an increased risk for many psychosocial problems, including poor academic performance, interpersonal difficulties, behavioral problems, substance abuse, and suicidal ideation and

attempts (Birmaher et al., 1996; Calear & Christensen, 2010; Cartwright-Hatton et al., 2004; Klemanski et al., 2017; Lemstra et al., 2008; Woodward & Fergusson, 2001).

Adolescent depression and anxiety are also highly comorbid with each other (Birmaher et al., 1996; Klemanski et al., 2017; Merikangas & Avenevoli, 2002) and have high comorbidity rates with a number of other conditions, including eating disorders (Hammen et al., 2008; Merikangas & Avenevoli, 2002), substance use disorders (Birmaher et al., 1996; Cartwright-Hatton et al., 2004), disruptive behavior disorders (Merikangas & Avenevoli, 2002; Merikangas et al., 2009), dysthymic disorder (Birmaher et al., 1996; Merikangas & Avenevoli, 2002), attention deficit/hyperactivity disorder (ADHD; (Hammen et al., 2008; Merikangas et al., 2009), and borderline personality disorder (Birmaher et al., 1996). Though remission of symptoms is possible, depression and anxiety are typically recurrent throughout youth into adulthood (Birmaher et al., 1996; Cartwright-Hatton et al., 2004; Lemstra et al., 2008; Woodward & Fergusson, 2001). Onset of these conditions in childhood may result in more severe adult psychopathology, as Hammen et al. (2008) determined that early onset recurrent depression is associated with greater depression frequency, severity, and maladjustment than later onset depression. A longitudinal study of adolescent anxiety yielded similar results, with higher levels of anxiety and the presence of multiple anxiety disorders both linked to worse adult outcomes (Woodward & Fergusson, 2001).

Risk Factors for Internalizing Problems

Predictive factors for youth internalizing problems such as depression and anxiety include individual, family, and community-level factors, as well as larger macrosystem level factors. For an individual adolescent, a higher likelihood of experiencing depression and anxiety is associated with certain genetic predispositions, such as short alleles at the 5-HTTLPR gene and reduced neuroprotective brain-derived neurotrophic factor (BDNF; Levinson, 2006), as well as with behavioral characteristics, including irregular sleeping and eating patterns (Ong et al., 2006), "high withdrawal/low approach" temperaments (i.e., less willing to approach possible reward, but more willing to withdraw in potentially unrewarding or uncertain contexts; Nigg, 2006), and negative affectivity and depressive attributional styles (Merikangas & Avenevoli, 2002). For depression specifically, some findings also indicate that an earlier age of onset is significantly associated with worse outcomes later in life, and that gender is also significant, with adolescent girls reporting higher rates of internalizing symptoms than boys (Birmaher et al., 1996; Merikangas & Avenevoli, 2002); however, one study conducted on a sample of lowincome, African American adolescents found that rumination mediated the relationship between female gender and depressive symptoms (Grant et al., 2004).

Family-related risk factors include early life stress (Graham et al., 1999), parental depression (Evans & Kim, 2013; Hammen et al., 2008), child maltreatment, and insecure attachments (Hankin, 2005; Woodward & Fergusson, 2001). One large study determined that of all the community, family, school, and individual risk factors assessed, family conflict was the strongest predictor of adolescent depression (Bond et al., 2005). McLaughlin et al. (2010) found a similar relationship between family conflict and childhood anxiety via the mediating effect of stress reactivity. Poverty-related stress may in part explain the connection between family conflict and adolescent depression and anxiety symptoms (Santiago et al., 2011). As the current study concerns a primarily at-risk, low-income sample of adolescents, the community and macrolevel factors associated with these symptoms are especially relevant for further exploration.

Poverty. The challenges associated with low socioeconomic status correspond to negative mental health outcomes in youth, including anxiety and depression. Children living in poverty are exposed to a greater number of stressors than their more advantaged peers, including higher rates of community violence, family difficulties, separation from adult caregivers, substandard housing, food insecurity, and frequent moves and transitions (Atkins et al., 2006; Evans & Kim, 2013; Santiago et al., 2013; Slopen et al., 2010). Child poverty is also linked to environmental risk factors, such as air pollution and other toxins, noise, crowding, and crime (Evans, 2004). High levels of neighborhood violence are associated with decreased regulation abilities for anger and sadness (Criss et al., 2016). Economic strain and poverty-related stress can also negatively impact interpersonal relationships among family members (Evans & Kim, 2013). Hardaway et al. (2012) state that there is a positive association between income and household chaos, which may be explained in part by a lack of resources, shifting work schedules, and single parenthood, among other contextual stressors.

Community and family-related stressors also contribute to low academic performance, and are thought to explain much of the achievement gap between low and high socioeconomic status (SES) students (Ferguson et al., 2007). In turn, academic difficulties can be a source of chronic stress for adolescents (Jayanthi et al., 2015). Adding to these stressors are racial and ethnic factors, where in the United States, families belonging to ethnic minority groups experience disproportionately higher levels of poverty (Santiago et al., 2013). Structural racism continues to economically disadvantage people of color, particularly Black Americans, through a legacy of discriminatory housing, education, and employment policies with lasting ties to income (Bailey et al., 2017). Additionally, racial minority status acts as a stressor in itself, due to the increased likelihood of being exposed to prejudice, discrimination, violence, and hostility (Kliewer et al., 2009; Santiago et al., 2013). Kliewer et al., (2009) reported that Black adolescents report a greater number of stressful life events than Caucasian adolescents.

Accumulative Stress. The accumulation of these chronic, community-level stressors is known as neighborhood disadvantage, which has been shown to increase the risk of both internalizing and externalizing psychological problems (Attar et al., 1994; Santiago et al., 2013). In comparison to any one stressor, multiple, chronic stressors can overwhelm the body's physiological response systems that are designed to handle infrequent, acute stress (Evans & Kim, 2013). Additionally, adolescence in general is a time of elevated stress sensitivity (Van Loon et al., 2019). A review of chronic stress and coping in disadvantaged children determined that in contrast to those from wealthier backgrounds, these children displayed increased sympathetic nervous activity, elevated hypothalamic pituitary adrenal axis (HPA) activity, greater metabolic dysregulation, and increased inflammation (Evans & Kim, 2013). Multiple risk factors predict depressed basal cortisol levels among African American youth; however, better emotion regulation skills serve as a protective factor for hypocortisolism (Kliewer et al., 2009).

Neurologically, exposure to chronic stress during childhood has been associated with reduced ventrolateral and dorsolateral prefrontal cortex activity later in adulthood, as well as the inability to suppress amygdala activation during emotional regulation efforts (Kim et al., 2013). Of these physiological changes, the dysregulation of glucocorticoids and catecholamines in particular has been shown to have a cumulative, damaging effect on the body, contributing to negative physical and mental health outcomes. Glucocorticoids and catecholamines are the primary hormonal mediators of the stress response (McEwen, 2000). Repeated activations of the HPA and sympathetic nervous systems cause elevated levels of these hormones, which is a beneficial adaptation to acute stress, but can become detrimental if the stress is sustained.

Chronic stress disrupts these hormones from returning to homeostatic levels, resulting in the down-regulation of glucocorticoid receptors and negatively impacting inflammatory and immune system functioning (Hannibal & Bishop, 2014; McEwen, 2000). Cognitive resources for coping with stress likewise become overwhelmed, with each additional stressor increasing the risk of emotional and behavioral problems emerging in children (Wadsworth, 2012). The cumulative wear-and-tear on the body that results from this chronic, poverty-related stress is referred to as allostatic load (McEwen, 2000; Wadsworth, 2012).

According to Wadsworth et al. (2012), these physiological changes that result from chronic stress can exacerbate physical health conditions and directly contribute to adverse mental health outcomes, including depression, anxiety, and alcohol use. Numerous studies report an inverse relationship between chronic stress and mental well-being in youth. Cumulative povertyrelated stress is associated with aggressive behavior, depression, anxiety, social disruptions, attention problems, and diminished self-regulatory ability (Evans & Kim, 2013; Hammack et al., 2004; Kliewer et al., 2009; Santiago et al., 2013). Hazel et al. (2008) determined that continued stress exposure in older adolescents explains the relationship between early adversity and depression. Additionally, poverty increases the risk of exposure to trauma and violence, and by extension, the risk of PTSD (Cunradi et al., 2002). And while adolescents may relieve some of their own stress through exercise and social organizations, low-income youth are less likely to have access to these outlets, due to lack of after-school and other recreational activities (Atkins et al., 2006) and fewer places to engage in physical activity (Evans, 2004). It is therefore necessary to identify strategies, such as those based on emotion regulation, problem-solving, and active acceptance, to help adolescents cope with allostatic load and reduce their physiological arousal levels. Emotion regulation is a protective factor against the outcomes associated with chronic

stress, and serves as a key component in many prevention and intervention programs (Kliewer et al., 2009).

The relationship between allostatic load and emotion regulation is bidirectional, given that mental health interventions that aim to alleviate chronic stress often use emotion regulation as a change mechanism, and also, these stressors can lead to emotion regulation problems if untreated (Criss et al., 2016; Morrison et al., 2010). Research on primary control coping strategies, including problem solving and emotional regulation, and secondary control coping strategies, such as acceptance and cognitive restructuring, has found that both improve functioning for youth experiencing poverty-related stress (Santiago et al., 2012). However, poverty-related stress also interferes with adolescents' ability to use primary and secondary control coping strategies, instead causing them to default to unhelpful involuntary stress responses, such as impulsive action, rumination, and emotional numbing (Santiago et al., 2012). Wadsworth, 2012).

Cross-national studies of both children and adolescents have reported positive correlations between SES and self-regulation, suggesting that family risk factors attributed to economic disadvantage may elicit maladaptive family dynamics and parenting styles, and lower children's ability to self-regulate (Hardaway, Wilson, et al., 2012). Low-income families also face more difficulty in obtaining access to mental health care services, for both logistical and systemic reasons. Some common barriers to access include limited transportation, competing obligations such as childcare and difficult work hours, unaffordability of services, and lack of health insurance (Santiago et al., 2013). Even when services are reachable, there may be language barriers and cultural competency concerns that reinforce patients' attitudes against seeking care, fearing that they may encounter stigma and discrimination (Santiago et al., 2013).

Protective Factors

Similar to adolescent risk factors, protective factors for vulnerable youth consist of interrelated individual, family, and community-level components. A resilient mindset, defined as the understanding that challenges can be overcome with effort, good strategies, and support, has been shown to improve school performance and peer relationships (Yeager & Dweck, 2012). In this way, believing growth is possible increases motivation (Haimovitz & Dweck, 2017). In terms of internalizing disorders, another study found that greater resilience predicted lower levels of depression, anxiety, stress, and obsessive–compulsive symptoms (Hjemdal et al., 2011). Similarly, adolescents' mastery, or perceived competence in coping with challenges, has been linked to better mental health (Barnes et al., 2009) and fewer depressive symptoms specifically (Herman-Stahl & Petersen, 1996). Other individual-level protective factors for internalizing symptoms include self-efficacy (Muris, Schmidt, et al., 2001), self-esteem and positive self-appraisals (Carbonell et al., 2002; Costello et al., 2008), problem-focused coping strategies (Donovan & Spence, 2000), active coping strategies (Herman-Stahl & Petersen, 1996; Steinhausen & Metzke, 2001), and higher levels of optimism (Herman-Stahl & Petersen, 1996).

Other interventions examined the protective effects of behavioral changes, such as healthy diet and sleep patterns (Cairns et al., 2014). At the family-level, numerous studies support parental support, warmth, and closeness as protective against adolescents' psychological distress (Herman-Stahl & Petersen, 1996; Klineberg et al., 2006; Sheeber et al., 2007). Of note, several studies examined these relationships in adolescents from disadvantaged backgrounds, finding that family support can counteract multiple risk factors (Ostaszewski & Zimmerman, 2006; Yan & Lin, 2005), and improve depression (Costello et al., 2008) and anxiety symptoms (McCabe & Clark, 1999). For Hispanic or Latin youth in particular, familism, defined as "a deeply ingrained sense of being rooted in the family," and family routines were significant protective factors against internalizing problems (Loukas & Prelow, 2004; Smokowski et al., 2007). Parents can also boost their children's resiliency and success in both academic and interpersonal settings by having nurturing expectations (Yan & Lin, 2005) and by instilling the importance of grit and a growth mindset (Ohtani et al., 2020).

Social and community support include other sources of protection from risk factors, as adolescence is a time of increased autonomy and time spent away from family (Hardaway, McLoyd, et al., 2012). In general, social support is associated with lower levels of both anxiety (Donovan & Spence, 2000) and depression (Galambos et al., 2004) in the presence of multiple stressors. These findings are also bolstered by other studies that have examined the inverse effect, where low support from friends and peers has been found to be associated with internalizing symptoms (Herman-Stahl & Petersen, 1996; Klineberg et al., 2006). While peer acceptance is a protective factor for adolescent internalizing disorders, peer rejection is a risk factor, which may be explained not only by the connection between acceptance and support, but also that of acceptance and self-esteem (Steinhausen & Metzke, 2001). Social competence and good interpersonal relationship skills are associated with lower levels of internalizing behavior (Carbonell et al., 2002; Youngblade et al., 2007), including in studies conducted with inner city minority youth (Smokowski et al., 2004). Smokowski et al. (2004) also reported preschool intervention as another protective factor. Other school factors that appear to protect against mental health symptoms include school safety (Youngblade et al., 2007), attendance (Milburn et al., 2009), and teacher mentorship (Yan & Lin, 2005). In terms of protective factors from the greater community, Youngblade et al. (2007) determined that community safety and support were associated with better socioemotional outcomes. Another study conducted by Sharma et al. (2019) revealed that neighborhood collective efficacy, or the idea that residents are socially connected and reinforce social control and rules for acceptable behavior, served as a protective buffer between cumulative risk and internalizing problems.

Early Intervention

With these risk factors and barriers to mental health care access in mind, it is necessary to support economically disadvantaged adolescents' mental health needs and prevent the development of internalizing psychopathology. Programs that are selected to meet these goals should address the impact of allostatic load on mental health outcomes, with the knowledge that while emotion regulation skill is a protective factor against chronic stress, its effectiveness can be compromised by that stress as well. To date, numerous psychotherapy prevention and treatment interventions have shown to be effective for reducing depression and anxiety symptomatology in adolescents, with the results of one meta-analysis estimating that it may be possible to prevent 22% of new depression cases each year (Cuijpers et al., 2008). Group-based cognitive-behavioral therapy (CBT) and interpersonal psychotherapy (IPT) are two wellestablished, evidence-based options for treating depression in clinical adolescent samples (Weersing et al., 2017). Randomized-control trials that included adolescents with various anxiety disorders as a combined group report that group CBT is also a well-established therapy for anxiety, and that individual cognitive-behavioral therapy (ICBT) is most effective for specific phobia (Davis III et al., 2011). Given that untreated depression and anxiety is associated with more severe pathology and related adverse outcomes in adulthood, and that only 25% to 34% of children and adolescents with these disorders receive adequate clinical treatment, many programs focus their efforts on prevention and early intervention (Neil & Christensen, 2009).

Early intervention and prevention programs for adolescents experiencing internalizing problems are typically differentiated by three different strategies: universal, selective, and indicated. Universal programs can recruit any participant regardless of symptom level, and as applied to school-aged children, typically focus on improving general mental health (Calear & Christensen, 2010). According to Kowalenko et al. (2005), high-risk adolescents in particular can benefit from universal programs, but due to limited resources, schools may opt instead for indicated and selective programs that focus on these students specifically. Selective programs target adolescents that are at risk for developing depression and anxiety disorders because they meet one or more established risk-factors, such as a family history of depression or high levels of poverty-related stress (Stockings et al., 2016). It can be argued that in a study design that aims to improve mental health outcomes for underserved student populations with multiple risk factors, most participants would automatically meet the at-risk criteria for these programs (Haggerty & Mrazek, 1994; Hawkins et al., 1999). Indicated programs aim to only recruit adolescents that display mild or early symptoms of these disorders, and usually incorporate a symptom screening process as part of study inclusion (Haggerty & Mrazek, 1994). Metareviews of both adolescent depression and anxiety trials have revealed that indicated programs appear to be the most efficacious for reducing depressive symptoms in youth (Calear & Christensen, 2010; Neil & Christensen, 2009; Reivich et al., 2013; Werner-Seidler et al., 2017). This may be explained by the elevated symptomology found in the participants of these trials, because there is more potential for symptoms to decrease and therefore larger effect sizes (Neil & Christensen, 2009; Reivich et al., 2013).

The content of these early intervention programs generally focuses on coping techniques, building resiliency, and problem-solving. According to meta-analysis research, the most common therapeutic approach used in depression and anxiety early interventions is CBT (Calear & Christensen, 2010; Neil & Christensen, 2009; Werner-Seidler et al., 2017), while others frequently utilize IPT (Cuijpers et al., 2008), psychoeducation (Calear & Christensen, 2010; Werner-Seidler et al., 2017), relaxation (Neil & Christensen, 2009; Werner-Seidler et al., 2017), mindfulness-based cognitive therapy (MBCT; (Werner-Seidler et al., 2017), or a combination of strategies. Chorpita, Daleiden, et al. (2005) identified common elements across these programs using a distillation and matching approach, grouping interventions according to technique and component similarities. For youth depression specifically, they found that the most common "practice elements," or strategies, that appeared across effective interventions were relaxation, problem-solving, activity scheduling, maintenance, skill building, and social skills training.

The Penn Prevention Program, which in 1994 was one of the pioneering efforts to prevent the emergence of depressive symptoms in at-risk early adolescents, is one such program that features both a cognitive and a social problem-solving component (Jaycox et al., 1994). The cognitive component teaches children to challenge the accuracy of negative beliefs and cope with their emotions, while the problem-solving component focuses on goal setting, decision making, and navigating stressful social situations. The original investigation into the program reported a significant decrease in depressive symptoms for the at-risk group at both postassessment and at the six-month follow up (Jaycox et al., 1994). Sheffield et al. (2006) later conducted a cognitive–behavioral intervention consistent with the previous study's design, this time measuring both depression and anxiety symptoms and including separate conditions for universal and indicated participant groups. The indicated condition contained the same cognitive restructuring and problem-solving skills training as the universal condition but was twice as long (90 minutes) to allow for additional training on developing interpersonal skills and self-reward. However, the at-risk students had a significant reduction in depressive and anxious symptoms regardless of experimental condition.

Similar to Sheffield et al.'s (2006) program, some early intervention programs have targeted both depression and anxiety symptoms together, or instead aimed to reduce the underlying stress and emotional dysregulation that may have led to these problems. The FRIENDS program was used in an adolescent anxiety trial to simultaneously reduce depression, using the rationale that there is a strong relationship between the two, and that they share overlapping symptomatology and cognitive-behavioral treatment strategies (Lowry-Webster et al., 2001). Completers from the high anxiety group reported significant decreases in levels of both anxiety and depression. Programs that utilized alternative therapeutic approaches include "Adolescents Coping with Emotions" (ACE), which uses CBT-based and interpersonal skills to build resilience and increase positive coping in order to reduce depressive symptoms (Kowalenko et al., 2005) and the "Problem Solving for Life" (PSFL) program, which is geared toward bolstering positive problem-solving orientation and optimistic-thinking styles (Spence et al., 2003). Other adolescent interventions focus on coping with stressful life experiences (Clarke et al., 1995) and improving self-regulation of dysphoric mood through contextual emotionregulation therapy (CERT; (Kovacs et al., 2006). The commonalities that exist across these studies demonstrate the interconnected relationships found among depression, anxiety, stress, emotion regulation, and social conflict. Still, these programs may differ in content and delivery methods. Most of the studies described are implemented through group-based therapy, though some utilize a parent-support component or are entirely family-based (Glenn et al., 2019; Lowry-Webster et al., 2001; Weersing et al., 2017). Increasingly, school-based prevention and early

intervention programs are being developed and investigated for effectiveness in reducing depression and anxiety symptoms in youth.

School-Based Interventions

School-based programs provide an accessible and affordable (usually free) option for early intervention of depression and anxiety symptoms in at-risk adolescents. Only 36% of children and adolescents that experience psychological issues receive mental health services, with low-income and ethnic minority youths overrepresented in those that lack access to care (Merikangas et al., 2011). As schools are the largest providers of mental healthcare to children and adolescents, serving 75% of those that receive care, they are uniquely positioned to help address this unmet need (Bains & Diallo, 2016; Masia-Warner et al., 2006). Schools offer a single, accessible location to provide services to youth, which makes them an optimal environment for prevention and early intervention efforts (Masia-Warner et al., 2006). According to Masia-Warner et al. (2006), school programs also reduce logistical barriers to mental health services, such as cost, transportation, and the impact of parental and demographic factors. This accessibility is particularly significant for low-income youth, as there are already limited mental health services in many of their communities, with schools being one of the few consistent resources (Atkins et al., 1998). In fact, The World Health Organization recommends the implementation of low-cost, school-based programs to support young people's mental health in disadvantaged community settings around the world (WHO, 2005).

Another benefit of school-based interventions is that they provide a more natural context for psychotherapy than clinical settings. Students are able to practice psychosocial skills among their peers in a realistic environment, increasing the likelihood that they will be adopted in their everyday lives (Fisher et al., 2004). The familiarity of this environment may also increase children and their families' willingness to engage in these services and reduce the stigma surrounding the pursuit of mental health care (Atkins et al., 1998; Masia-Warner et al., 2006). From a research perspective, a school environment provides "unparalleled contact with youth" (Masia-Warner et al., 2006), allowing for an easier recruitment process, and also fosters the acquisition of new skills, given that it is seen as a place of learning (Neil & Christensen, 2009).

A school environment facilitates the development of academic, emotional, and interpersonal skills, which in turn result in better overall mental health outcomes. Findings from several studies support addressing multiple skill domains at once, given that improvements in one area are likely to increase skills in another. For example, emotion regulation abilities predict both improvements in school success (Ivcevic & Brackett, 2014; McClelland & Cameron, 2011) and reductions in depressive symptoms (Berking et al., 2014). One metanalysis found support for increasing social and emotional learning (SEL) concurrently with academic learning, reporting that the SEL interventions analyzed significantly improved academic performance as well as social and emotional skills (Durlak et al., 2011). Mindfulness-based school interventions enhance cognitive and emotion regulation capacities to improve stress reactivity factors as well as rumination, intrusive thoughts, and social stress (Mendelson et al., 2010). Another study conducted by Beauchemin et al. (2008) determined that mindfulness meditation decreased anxiety and detrimental self-focus of attention, which together contributed to better social skills and academic outcomes. Other programs centered on stress management have successfully improved academic performance through increased motivation as well as general mental health though cognitive restructuring (Chinaveh et al., 2010; Keogh et al., 2006).

Taken together, school-based interventions are effective in promoting emotional, social, and academic core competencies and in reducing adverse mental health outcomes because they can utilize the intersections of these domains to their advantage (Atkins et al., 2017). Schools provide a single, ideal location for targeting all of these key areas of development, as it is an environment where they naturally overlap (Adelman & Taylor, 2006). Likewise, researchers should be mindful of the ways that deficits in one area can negatively impact another. Adolescents frequently report stress related to assignments, grades, and expectations about school and their future plans (Van Loon et al., 2019), and this academic stress is strongly associated with negative academic affect and more negative general moods (Arsenio & Loria, 2014). Impairments in cognitive and emotional functioning, such as those brought on by overwhelmed stress response systems, can negatively impact academic performance (Ivcevic & Brackett, 2014; McClelland & Cameron, 2011). Additionally, child depression predicts decreases in school success and cognitive functioning (Merikangas & Avenevoli, 2002). Another investigation concluded that elevated depressive symptoms in children and adolescents is associated with an increased likelihood of academic difficulties and social impairment compared to peers (Gillham et al., 2006). These studies highlight the importance of using an integrated approach to address these interrelated core competencies.

School-based interventions have been shown to be effective for improving depression and anxiety symptoms. Evidence from one metaanalysis that included a majority of studies conducted in school settings suggests that universal, selective, and indicated prevention groups all significantly reduce internalizing pathology (Stockings et al., 2016), while another found that while this was true for anxiety symptoms, targeted approaches were more beneficial than universal ones in reducing depression (Werner-Seidler et al., 2017). Other metaanalyses focusing on universal and indicated prevention programs for adolescent depression determined that the interventions they identified were effective in reducing depressive symptoms, especially for the students that entered with elevated symptoms (Calear & Christensen, 2010; Sheffield et al., 2006). Most of these programs utilized cognitive-behavioral based strategies. Indeed, a review of the common elements that appear most frequently across evidence-based adolescent prevention programs determined that problem-solving, communication skills, and insight building were the most common practice elements, while psychoeducation, modeling, and role play were the most common instructional elements (Boustani et al., 2015).

Reviews of school-based prevention and early intervention efforts for primarily nonspecific adolescent anxiety, many which also used CBT-based skills, have provided support for their effectiveness as well (Fisak et al., 2011; Neil & Christensen, 2009). In these metareviews, programs were effacacious regardless of strategy type (i.e., universal, selective, or indicated); however, Fisak et al. (2011) determined that the specific program used and provider type were significant moderators, with better outcomes associated with the FRIENDS program and with professional over lay provider delivery. In individual trials, the FRIENDS program, which is a brief group-based CBT intervention designed to help youth cope with anxiety, has been shown to reduce anxiety symptoms (Barrett & Turner, 2001), as well as depressive symptoms for highanxiety adolescents (Lowry-Webster et al., 2001). Other school-based prevention programs that have been effective for both depression and anxiety symptoms include the Resourceful Adolescent Program-Adolescents (RAP-A), which uses a combination of cognitive-behavioral and interpersonal skills components (Merry et al., 2004; Muris, Bogie, et al., 2001; Shochet et al., 2001), The Penn Resiliency Program, utilizing both CBT and problem-solving components (Gillham et al., 2006; Jaycox et al., 1994; Roberts et al., 2003), and the Adolescents Coping with Emotions (ACE) program, which combines cognitive-behavioral and interpersonal techniques with an emphasis on coping skills (Kowalenko et al., 2005). In general, the literature base

supports the use of school-based interventions to improve mental health in adolescents, both for depression (Pössel et al., 2004; Raes et al., 2014; Shirk et al., 2009; Shoshani & Steinmetz, 2014; Young et al., 2006) and anxiety (Balle & Tortella-Feliu, 2010; Bernstein et al., 2005; Fisher et al., 2004; Masia-Warner et al., 2005; Weems et al., 2015).

Dialectical Behavior Therapy

Dialectical Behavior Therapy (DBT) is an evidence-based psychotherapy that aims to address patients' emotion regulation difficulties more comprehensively than other cognitivebehavioral modalities, such as CBT, by incorporating acceptance and change strategies into its treatment methods (Linehan, 1993). Dialectical Behavior Therapy, which is rooted in CBT techniques, was originally developed by Dr. Marsha Linehan for individuals who were chronically suicidal or had borderline personality disorder, and it has since been adapted to treat a variety of mental health problems across different settings. According to Linehan (1993), what makes DBT more effective than other forms of therapy, and more validating from a patient's perspective, is that one of its main foundational principles is to find a balance between acceptance and change. This balance is central to both treatment and the therapeutic alliance and is referenced in the name of the therapy itself: the two "opposing," dialectical forces that DBT attempts to reconcile are acceptance and change. Dr. Linehan notes that, paradoxically, acceptance begets change, given that therapeutic change can only occur once both the patient and clinician accept "what is" (Linehan, 1993).

Change strategies are typically a component of cognitive-behavioral interventions, but in the context of DBT, they emphasize the development of two core skills, emotion regulation and interpersonal effectiveness. Emotion regulation and interpersonal effectiveness help patients navigate dysregulation and stressful social situations. More specifically, emotion regulation refers to one's ability to the ability to monitor, evaluate, and modulate their affective state, while interpersonal effectiveness entails the balance of maintaining positive relationships (respect for others) while also using assertiveness to meet one's own needs (self-respect; (Linehan, 1993; MacPherson et al., 2013). The acceptance-based strategies, including mindfulness and distress tolerance, help to acknowledge the client's difficulties that they are experiencing in the moment. Mindfulness involves increasing self-awareness, becoming less judgmental, and gaining control of one's attention (Mazza et al., 2016). Distress tolerance focuses on both crisis survival (i.e., techniques for distracting, self-soothing, and re-framing cognitions) as well as acceptance (i.e., experiencing their current situation nonjudgmentally to decrease the suffering that comes from being unwilling to process it; Linehan, 1993). Both mindfulness and distress tolerance are emphasized through the clinician's use of validation to create a supportive environment devoid of criticism. Still, the clinician is also responsible for pushing for change in order to achieve balance with acceptance. This balance is central to both treatment and the therapeutic alliance and forms the basis of what "dialectical" signifies in the modality's name: reconciling two "opposing" dialectical forces in honoring both acceptance and change (Linehan et al., 1993). Moreover, dialectics are a frequent theme of DBT in general, where clients are encouraged to use "and" rather than "but" in between seemingly contradictory statements to validate that the two experiences (or feelings) can be true at once (Dimeff & Linehan, 2001). For example, a statement such as "this task is really hard, but I can finish it" can be modified to "and I can finish it" in order to avoid dismissing the truth of the task's difficulty, leading to a more balanced and self-compassionate perspective.

In adults, DBT has demonstrated efficacy for chronic suicidality and borderline personality disorder (Feigenbaum, 2007; Linehan et al., 2006), but also for a variety of other

mental health conditions, including but not limited to depression (Koons et al., 2001), self-harm behaviors (Comtois et al., 2007; Linehan et al., 1991; Verheul et al., 2003), substance use (Linehan et al., 2002), and anxiety symptoms (Webb et al., 2016). It has also been applied in a variety of settings, including primary care clinics (Koons et al., 2001), outpatient clinics (Linehan et al., 2006), community mental health clinics (Comtois et al., 2007), and inpatient and forensic locations (Dimeff & Koerner, 2007). In 1999, Rathus and Miller developed an adaption for DBT for adolescents called DBT-A, and like the original purpose for adults, was first used to treat suicidal ideation and symptoms of borderline personality. After conducting a trial with adolescents that experienced these conditions, the vast majority of whom also had comorbid depression, Rathus and Miller (2002) concluded that DBT-A significantly reduced these problems and was a promising new treatment for adolescents. Later investigations expanded upon these findings, supporting DBT-A as a treatment for adolescents with borderline personality disorder and suicidal ideation (Cook & Gorraiz, 2016; Fleischhaker et al., 2011; Fleischhaker et al., 2006; Hjalmarsson et al., 2008; James et al., 2008; Meaney-Tavares & Hasking, 2013; Sunseri, 2004; Woodberry & Popenoe, 2008), as well as for non-suicidal selfinjury (Cook & Gorraiz, 2016; Geddes et al., 2013; Glenn et al., 2019), bipolar disorder (Goldstein et al., 2007), eating disorders (Safer et al., 2007; Salbach et al., 2007; Salbach-Andrae et al., 2008), trichotillomania (Welch & Kim, 2012), other Cluster B personality disorders (Chugani et al., 2013), oppositional defiant disorder (ODD; (Nelson-Gray et al., 2006), substance use (Beckstead et al., 2015), and trauma-related symptomatology (Geddes et al., 2013).

According to MacPherson et al. (2013), who conducted a review on DBT for several of these psychiatric disorders in adolescents, disorders that respond well to DBT share a "common underlying dysfunction in emotion regulation." In other words, DBT is particularly beneficial for

adolescents who struggle with emotion dysregulation, which often manifests as one of these problem behaviors (MacPherson et al., 2013). A few of the previously mentioned studies refer to improvements in emotion regulation specifically (Geddes et al., 2013; Goldstein et al., 2007). While most of these interventions would be considered indicated programs, Burckhardt et al. (2018) found that there is preliminary evidence to support the use of DBT prevention programs to increase emotion regulation skills.

Currently, there are a limited number of published studies that have examined the efficacy of DBT on internalizing disorders in adolescents. For the present literature review, only one study measured the effect of DBT on anxiety and depression directly, investigating whether DBT core skills predicted significant differences in these symptoms (Lenz et al., 2016). It was determined that both emotion regulation and interpersonal effectiveness were substantial predictors of change and were significantly associated with reductions in depression and anxiety. Participants used in this study had already been diagnosed with a mood or anxiety disorder and were recruited from a community sample. Aside from this study, several others measured anxiety and depression as secondary outcome measures, due to them primarily focusing on other psychopathology symptoms such as suicidal ideation. Depression was frequently examined, and many studies reported significant reductions in these symptoms (Cook & Gorraiz, 2016; Goldstein et al., 2007; James et al., 2008; James et al., 2011; Katz et al., 2004; Meaney-Tavares & Hasking, 2013). Other DBT interventions showed significant improvements in both depression and anxiety symptoms (Geddes et al., 2013; Nelson-Gray et al., 2006; Woodberry & Popenoe, 2008). A single study included in this search examined anxiety but not depression, determining that a DBT school refusal intervention reduced anxiety-based school refusal (Chu et al., 2015). These results demonstrate that, while DBT appears to be effective in reducing

adolescent internalizing symptoms, there remains a gap in the literature for investigations to measure this hypothesis directly.

Overall, adolescent DBT interventions have been successfully implemented in a variety of settings, including inpatient programs (Fleischhaker et al., 2011; Katz et al., 2004; Memel, 2012; Salbach et al., 2007), residential care units (Sunseri, 2004), outpatient programs (Goldstein et al., 2007; Safer et al., 2007; Salbach-Andrae et al., 2008), community care settings (James et al., 2008), and juvenile detention centers (Fasulo et al., 2015; Trupin et al., 2002). Fasulo et al. (2015) notes that adolescents in juvenile detention centers typically have experienced chronic stress and trauma, which contribute to emotion regulation difficulties. Therefore, DBT may be particularly effective in this setting. Other studies support the efficacy of DBT used in other vulnerable adolescent populations, including with foster children (James et al., 2011) and transitional youth (Rakfeldt, 2005). More research is needed to investigate DBT for other at-risk adolescents, because while previous studies have looked at risk within the context of mental health problem severity, risk can also be conceptualized in terms of coming from a disadvantaged background, particularly because of the chronic stress that is associated with this.

Another significant gap in the literature is the lack of studies that have examined schoolbased DBT. While some studies have reported successful implementations of DBT programs in colleges (Chugani et al., 2013; Meaney-Tavares & Hasking, 2013; Rizvi & Steffel, 2014), a limited number of pilot school-based investigations have been conducted with students 18 years and younger. Ricard et al. (2013) sampled youth from a Disciplinary Alternative Education Program (DAEP), reporting that the DBT skills group intervention significantly reduced indicators of behavioral distress. Another school-based intervention, conducted by Zapolski and Smith (2017), determined that DBT was effective in reducing risky health behaviors. Additionally, a manualized program for school-based DBT, titled Skills Training for Emotional Problem Solving for Adolescents (DBT STEPS-A) was recently developed by Mazza et al. (2016) as a social–emotional learning curriculum for educators. DBT STEPS-A includes 30 lesson plans of DBT skills for teachers to deliver to students from grades 6-12. In the forward of the manual, Dr. Linehan praises the authors for creating a DBT adaptation for schools, which while designed for universal populations of adolescents, still addresses a "continuum of emotional needs." Flynn et al. (2018), in evaluating the program in a sample of 72 adolescents, found significant reductions in depression, anxiety, and social stress symptoms. Two other recent investigations have demonstrated successful preliminary findings in terms of improved emotion regulation and satisfaction with DBT skills (Gasol et al., 2022; Martinez et al., 2022). The current study seeks to expand upon the findings of these pilot trials.

Current Study

School-Based Opportunities for Adolescent Recovery (Project SOARing) was derived from DBT STEPS-A's core component lessons. Unlike the three recent DBT STEPS-A preliminary investigations, Project SOARing focuses on a Tier 2 (i.e., selective) rather than universal population of adolescents, with elevated levels of emotion dysregulation included as an inclusion criterion. Given DBT's demonstrated effectiveness with indicated populations of adolescents facing significant emotional distress, the application of DBT STEPS-A to a targeted intervention may allow for even greater symptom change. As prior investigations have focused on primary prevention with universal samples, this study will be the first to examine an adaptation of DBT STEPS-A's preliminary effectiveness for use with Tier 2 adolescent populations. As a Tier 2 intervention, Project SOARing also differs from the Lenz et al. (2016) study, which recruited a clinical sample of adolescents referred from their community. The present study will be school-based and include participants that have elevated, though usually subclinical symptom levels.

DBT has also been understudied for the purpose of targeting improvement in depression and anxiety symptoms as primary outcome measures, particularly within the context of vulnerable and emotionally dysregulated youth. This appears to be the first study to tie all of these research imperatives together, examining the effectiveness of a DBT-based program in reducing internalizing symptoms in at risk-adolescents. These results can support the effectiveness of DBT in schools and inform how future programs structure and disseminate DBT skills programming. Thus far, preliminary work suggests that the intervention is effective in teaching DBT skills in the context of a Tier 2 intervention for at-risk teens in a school setting, with results from both pre-pilot (Mazzone et al., 2023) and pilot (Boustani et al., 2020) studies demonstrating sufficient acceptability, feasibility, and appropriateness. A DBT Universal intervention was also delivered in a classroom setting to students at Sierra High School. From this trial, students indicated that they had an overall and consistent positive experience (Antommarchi et al., 2021). Preliminary results obtained using the Youth Outcome Questionnaire-Self Report (YOQ-SR; Ridge et al. (2009) support the effectiveness of the intervention, although the initial pilot did not achieve a large enough sample size to test for statistical significance as a result of COVID-19 pandemic-related school closures (Boustani et al., 2020).

The goal of the overarching Project SOARing investigation is to determine whether this DBT skills program addresses the significant need for mental health support at an underserved high school. Results will also reveal how effectively the program addresses the needs of the community as a whole, and how successful it would be if it were implemented as a communitybased intervention. While the present study shares these goals, it differs in its main objective, which is to determine whether participating in the intervention significantly predicts improvements in DBT core skills and internalizing symptoms in this sample of at-risk adolescents. We hypothesize that intervention participation will significantly improve core skills and internalizing symptoms, as demonstrated by comparing baseline assessment to post-assessment scores. Given the sparse literature on DBT for adolescent internalizing symptoms and in school contexts, this study aims to fill a significant gap in the literature by determining whether DBT skills may be used to improve depression and anxiety in at-risk adolescents, and also whether this application of DBT in a school setting is effective.

The second main objective of this study, provided that the intervention is successful in leading to improvements internalizing outcomes, is to determine whether the DBT core skills are what drive improvements in depression and anxiety symptoms. It is hypothesized that improvements in DBT core skills will predict improvement in depression and anxiety symptoms, meaning that the skills provide the mechanisms of change that drive improvements in internalizing symptoms. These results would provide support to the idea that if emotion dysregulation exacerbates internalizing problems, then conversely, these problems may be reduced by building emotion regulation skills. If internalizing symptoms improve independently of increased skills, then this may suggest that other factors are influencing treatment outcomes. Therefore, these results would indicate whether or not this particular DBT adaptation drives symptom change in a way that is expected based on previous research. Additionally, if only certain skills predict symptom change, the results will provide preliminary evidence for which DBT skills are particularly relevant for improving internalizing symptoms. Leaders of future

DBT programs could then decide to emphasize those skills. In this way, the results of this study may inform future intervention protocols. Our aims and hypotheses are summarized as follows:

Aim 1: Determine whether participating in the intervention significantly predicts improvements in core skills (emotion regulation, mindfulness, interpersonal effectiveness, and distress tolerance) and internalizing symptoms (depression and anxiety) among at-risk adolescents.

Hypothesis 1: Intervention participation will significantly improve core skills and internalizing symptoms for adolescents in this population. (Null: The intervention will not cause significant differences between groups in core skills or internalizing symptoms.)

Aim 2: Determine whether improvements in DBT core skills (emotion regulation, mindfulness, interpersonal effectiveness, and distress tolerance) predict improvements in internalizing symptoms (depression and anxiety).

Hypothesis 2: The DBT core skills provide the mechanisms of change that drive improvements in internalizing symptoms. (Null: There is no relationship between DBT core skills and internalizing symptoms.)

Method

Setting

This study takes place at a continuation high school for youth with academic credit deficiencies located in southern California. Students attending this school are considered to be atrisk of not graduating, and as the school is located in a historically underserved area, many members of the student population face additional socioeconomic challenges to both academic success and psychological well-being. In addition to addressing their mental health needs, these students would also benefit from improved access to physical health resources and expanded social services.

Understanding the needs of its student population, this school launched its own oncampus Wellness Center, offering access to the nurse's office, telehealth visits with a physician assistant or nurse practitioner, guidance counselors, program specialists, mental health services, and referrals to other community-based services. This initiative supports students' physical health, mental health, and social service needs, with the understanding that many students often present with multifaceted problems requiring a combination of services. School-based healthcare programs therefore offer a promising solution for filling these resource gaps and improving physical and mental health disparities. In fact, evidence suggests that both closely linked school and community health systems, as well as fully integrated school/community child health systems, can be integral contributors to the health and well-being of children (Lear, 2002). For the present study, guidance counselors from the Wellness Center facilitated the identification and recruitment of students with increased mental health needs. This research, including all community-initiated recruitment and University-facilitated consent procedures, was conducted in accordance with APA Ethical Guidelines, and with full approval by the University's IRB and our community partner (IRB #5190320).

Participants

Participants were recruited from a continuation high school in Southern California. Upon admission to the school, every youth enrolled completed a self-report mental health survey developed by the school's team of guidance counselors to identify whether they had been exposed to trauma or presented with symptoms of depression and anxiety. The survey also assessed risk factors such as homelessness, grief, parental psychopathology, and foster care involvement by having students select either yes or no responses. Students who endorsed any of these risk factors were flagged by the school counselor for potential risk of mood and emotion regulation difficulties. The lead school counselor then conducted a brief interview with these students to assess whether they appeared to be struggling with emotion dysregulation. If the lead counselor determined that they were at-risk, she asked for consent to share their contact information with our research team. If they agreed, the students were approached by the research team and asked whether they were interested in participating in group therapy sessions. Students were excluded if they presented with psychosis, active suicidal ideation, or developmental delays. Additionally, the Revised Child Anxiety and Depression Scales (RCADS) was completed at baseline to support the lead school counselor's findings that the students chosen were at increased risk for these challenges. At baseline, participants had an average RCADS raw score of 57.16 (SD = 30.70), which corresponds to a *t*-score of 63 for this age group. According to Chorpita et al., t-scores of 65 or higher indicate scores at the borderline clinical threshold, while t-scores of 70 or higher indicate scores above the clinical threshold (2000). As the scores for this sample approached this borderline clinical cutoff, we can conclude that study participants did have slightly elevated levels of depression and anxiety.

A total of 76 adolescents between the ages of 15 and 18 participated in the study (M = 16.72, SD = 0.71), with 45 (59.2%) participants identifying as female, 28 (36.8%) identifying as male, and 3 (3.9%) identifying as nonbinary. In terms of race and ethnicity demographics, 56 (73.7%) participants indicated that they were Hispanic/Latino, 9 (11.8%) were Black/African American, 6 (7.9%) were Hispanic/Latino and White/Caucasian, 2 (2.6%) were White/Caucasian, and 3 participants total (3.9%) indicated that they were Native American, Native American and Black/African American, and Hispanic/Latino and Samoan, respectively.

In terms of sexual orientation, 46 (60.5%) of participants indicated that they were heterosexual while 14 (18.4%) were bisexual, 9 (11.8%) were gay/lesbian, 4 (5.3%) were pansexual, 1 (1.3%) was asexual, and 1 (1.3%) was demisexual. Full demographic information is presented in Table 1.

As expected, participants endorsed a variety of psychosocial stressors. In terms of adverse childhood experiences (ACEs), 12 (15.8%) reported a history of abuse or violence and 12 (15.8%) also reported a history of abandonment. Eight (10.5%) participants indicated that they had been adopted or experienced being in foster care. For academic-related stressors, 19 (25.0%) reported that they received an Individualized Educational Plan (IEP), while 12 (15.8%) reported that their grades were below average. In terms of family history, 21 (27.6%) participants reported that they had a family history of mental illness, and 19 (25.0%) endorsed a family history of drug use. Seven (9.2%) students also endorsed past and current substance use themselves. Table 2 presents a summary of participants' endorsed psychosocial stressors. Excluding the variable for academic performance, the mean number of reported ACES was 1.48 (SD = 1.74), with 13.70% of participants reporting four or more ACES.

Procedures

Eligibility Criteria. Students who presented with severe psychosis, active suicidal ideation, or developmental delays were excluded from study participation (as assessed by the lead school counselor). Students were allowed to participate in the intervention without participating in the study if they wished.

Recruitment. The lead counselor at Sierra High School identified students exhibiting emotion regulation difficulties using the mental health screener that is administered to all students upon entry to the school. The counselor then met with students who exhibited symptoms and met all

other study eligibility criteria to determine their willingness to participate in group therapy sessions and the current study.

Consent. Students who were interested in study participation were required to provide both verbal and written informed consent. While a parent consent form was available and was sent home with participants, signatures from parents were not required, as all students who participated in the study were eligible for a parental waiver that allowed them to consent to study participation.

Assignment and scheduling. Intervention sessions were designed to fit the unique block structure of this continuation high school, which offers a flexible, accelerated schedule of six, 6week blocks per academic year. Each group therefore attended the intervention for the duration of one block and received 50 minutes of group therapy twice each week for six weeks for a total of 12 intervention sessions. The two sessions per week were offered during different class periods to ensure that students would not be missing the same class twice each week.

In this continuation high school, students are divided into two cohorts, consisting of one that attends school in the mornings on Monday through Friday from 8am to 12pm, and an afternoon cohort that attends school from 12pm to 4pm. Though the initial plan was to have an even number of morning and afternoon SOARing groups, the lead student counselor determined that a larger proportion of the afternoon cohort would benefit from participation in the intervention. As a result, eight groups including a final total of 54 participants were conducted during the afternoon cohort, while three groups including a final total of 22 participants were conducted during the morning cohort. Group sizes ranged from 5-15 participants (M = 10.55, SD = 2.98). Later analyses would reveal that emotion dysregulation was the only outcome that significantly differed between the morning and afternoon cohort, such on average, morning

cohort students had 10.31 points greater emotion regulation than that of the afternoon cohort, 95% CI [1.05, 19.58], p < .05 (Mazzone, 2024). Additionally, though the original goal was to randomly assign participants into immediate treatment and waitlist control conditions, difficulty identifying waitlist participants in advance resulted in an insufficient waitlist control sample size to analyze for the present study.

Data Collection. All study data were collected using a tablet. A flowchart of the study schedule depicting each group's progression through these timepoints is presented in Figure 1. On day 1 of the intervention, participants in the first treatment group (Group 1) completed baseline measures. Additionally, participants that had already been identified for the first waitlist group (Group 2) completed a modified set of waitlist baseline measures that assessed mental health outcomes but not DBT skills, in order to reduce participant burden. Group 1 then completed the intervention over the next six weeks. At week 6, Group 1 completed post-treatment assessment measures, while Group 2 completed full baseline measures. Participants that had already been identified for the second waitlist group (Group 3) also completed the waitlist baseline measures during this time. At week 12, Group 2 had completed the intervention and post-treatment assessment measures, while Group 1 completed follow up measures and Group 3 completed full baseline measures. Group 4 also completed the waitlist baseline measures during this time. At week 18, Group 1 completed their second follow up, Group 2 completed their first follow up, Group 3 had completed the intervention and post-treatment assessment measures, Group 4 completed full baseline measures, and Group 5 completed waitlist baseline measures. Group 5 was the last group to complete the intervention, with full baseline measures occurring on week 24 and post-treatment assessment measures following the intervention on week 30. This study schedule was repeated during the following academic year. Notably, Group 5 of that second year consisted of two separate groups, one with morning cohort participants and the other with afternoon cohort participants, in order to ensure that the recruitment goal was met. Additionally, though the overall recruitment goal was met, the waitlist baseline and second follow up timepoints were not included in analyses for the present study due to inadequate sample size.

Intervention

The intervention is based on the core components of DBT Skills in Schools: Skills Training for Emotional Problem Solving for Adolescents (DBT STEPS-A; Mazza et al., 2016) which itself is based on the DBT for adolescents manual (Rathus & Miller, 2002). The DBT STEPS-A manual follows a curriculum of 30 lessons that focus on the four core DBT skills: emotion regulation, interpersonal effectiveness, distress tolerance, and mindfulness. In deriving a condensed, 12-session protocol based on this program for the current study, the research team piloted several of the activities in the manual and selected the ones that were best received by youth, based on session evaluations and field notes. Results of this pilot process have been published elsewhere (Mazzone et al., 2023). The activities chosen each reinforce a given DBT skill, and each skill is taught three times on a rotating schedule. The first session serves as an orientation meeting, used to establish ground rules, explain the confidential nature of group therapy, and provide an introduction to DBT. The second session teaches participants mindfulness techniques, and each of the subsequent sessions begin with 10-15 minutes of mindfulness exercises, reinforcing the idea that mindfulness is a skill that should be continuously practiced. For the next nine sessions, the intervention program is designed to cover the interpersonal effectiveness, and distress tolerance, and emotion regulation components three times each, with every session devoted to one particular component on a rotating schedule. The content of each session begins with 10 minutes of recap of the previous session(s) (for the second week through the last week), followed by 10-15 minutes to teach the skills training component of the week. Each session concludes with approximately 10-15 minutes of group discussion, and up to five additional minutes for questions and feedback. The twelfth week serves as a debriefing or wrap-up session, providing a conclusion that ties all of the skills that the students have learned all together. As a whole, the intervention consists of 12, 50-minute sessions, with two sessions occurring each week for a total duration of six weeks. A more detailed schedule of the intervention can be found in Table 3. Each therapy session was led by at least two psychology doctoral students from Loma Linda University, under the supervision of a licensed clinical psychologist who was both trained in DBT skills and DBT STEPS-A specifically by the intervention's developers, Drs. Mazza and Mazza.

Measures

Revised Child Anxiety and Depression Scales (RCADS). Participants were administered the Revised Child Anxiety and Depression Scales (RCADS) in order to evaluate any present anxiety and depression symptoms (Chorpita et al., 2000). The RCADS is a 47-item self-report questionnaire that asks participants to rate how often they experience internalizing thoughts and behaviors on a four-point Likert scale, with responses ranging from a score of 0 =*Never* to 3 = Always. The total questionnaire can be further segmented into six subscales, including separation anxiety disorder (SAD; seven items), social phobia (SP; nine items), generalized anxiety disorder (GAD; six items), panic disorder (PD; nine items), obsessive compulsive disorder (OCD; six items), and major depressive disorder (MDD; ten items). For all subscales, higher scores indicate more severe overall symptoms. For ease of comparing change scores later in our analyses, these scores were reverse-coded with higher scores representing symptom improvement. In addition to the subscales, the RCADS also yields a Total Anxiety Scale, produced by summing the five anxiety subscales, and a Total Internalizing Scale, which is the total score of all 47 items (Chorpita et al., 2000). For the current study, the full, 47-item questionnaire was completed at baseline, post-assessment, and follow-up, as well as all other study measures.

The RCADS was derived from The Spence Children's Anxiety Scale (SCAS), a 44-item self-report measure designed to evaluate symptoms of separation anxiety, social phobia, obsessive-compulsive disorder, panic-agoraphobia, generalized anxiety and fears of physical injury in children (Spence, 1997, 1998). The revision and confirmatory factor analysis process resulted in the current five anxiety subscales, with the addition of the MDD subscale to reflect the clinically important relationship between youth depression and anxiety (Chorpita, Moffitt, et al., 2005; Chorpita et al., 2000). The MDD subscale includes items such as "I feel sad or empty," and "I have no energy for things." For the purpose of the current investigation, the MDD subscale and the Total Anxiety Scale were used to evaluate these symptoms in the student sample. Examples of anxiety items include "I worry that bad things will happen to me" from the GAD subscale and "I suddenly feel as if I can't breathe when there is no reason for this" from the PD subscale. The RCADS has demonstrated adequate reliability across all subscales, with Cronbach's alpha values ranging from: SP = 0.81-0.82, PD = 0.79-0.85, GAD = 0.77-0.80, MDD = 0.76, SAD = 0.76-0.78, and OCD = 0.71-0.73 (Chorpita et al., 2000). When administered to a clinical sample of 513 youth, the scale was also shown to have good internal consistency, with the following Cronbach alpha values: SP = 0.87, PD = 0.88, GAD = 0.84, MDD = 0.87, SAD = 00.78, and OCD = 0.82 (Chorpita, Moffitt, et al., 2005). This study also supported the reliability and validity of the revised factor structure and items that were modified as part of the original RCADS paper's confirmatory factor analysis (Chorpita, Moffitt, et al., 2005; Chorpita et al.,
2000). In our sample, the RCADS demonstrated excellent internal consistency, including for the MDD subscale ($\alpha = 0.93$ pre-intervention, 0.92 post-intervention), Total Anxiety Scale ($\alpha = 0.96$ pre-intervention, 0.97 post-intervention), and Total Internalizing Scale ($\alpha = 0.97$ pre-intervention, 0.98 post-intervention). The full RCADS measure is included in Appendix A.

The Difficulties in Emotion Regulation Scale (DERS). The DERS was used to measure the extent that participants experience emotional dysregulation (Gratz & Roemer, 2004). For the current study, a version of the DERS that has been adapted for use in adolescent populations was administered (Weinberg & Klonsky, 2009). The DERS is a 36-item self-report questionnaire that asks participants to score how often they feel various statements relating to emotion regulation apply to them on a five-point Likert scale, with responses ranging from a score of 1 = Almost *Never* to 5 = Almost Always. Higher scores represent greater problems with emotion regulation. For ease of comparing change scores later in our analyses, these scores were reverse-coded with higher scores representing skill improvement. Eleven of the items, which measure successful emotion regulation, are reverse-coded when scoring this scale to match the remaining items that yield greater scores when greater emotional difficulties are present. An example of a reverse-coded item is "I am attentive to my feelings," in contrast to the majority of the items in the assessment, such as "When I'm upset, I start to feel very bad about myself."

The DERS was developed to measure clinically relevant difficulties in emotion regulation across six domains, according to a conceptualization of the construct that the original researchers derived from a factor analysis (Gratz & Roemer, 2004). The six domains, which can also be scored as subscales, include nonacceptance of emotional responses, difficulty engaging in goal-directed behavior, impulse control difficulties, lack of emotional awareness, limited access to emotion regulation strategies, and lack of emotional clarity. Gratz and Roemer (2004) reported strong internal consistency, with a Cronbach's alpha of 0.93 for the total scale and individual subscale alphas all greater than 0.80. The adolescent adaptation of the scale has similar internal consistency as the overall measure ($\alpha = 0.93$), with subscale internal consistency ranging from adequate to excellent ($\alpha = .76$ -.89; Weinberg & Klonsky, 2009). The DERS total score had excellent internal consistency in our sample ($\alpha = 0.94$ pre-intervention, 0.92 post-intervention). The full DERS measure is included in Appendix B.

The Mindfulness Attention Awareness Scale (MAAS) was administered to assess how frequently participants experience mindful states over time, which can be defined as a form of consciousness involving enhanced attention to and awareness of current experience or present reality (Brown & Ryan, 2003; Carlson & Brown, 2005). The MAAS is a 15-item self-report measure that asks participants to rate how frequently they experience behaviors that are not characteristic of mindful states on a six-point Likert scale, with responses ranging from a score of 1 = Almost Always to 6 = Almost Never. Because responses that indicate participants are almost always not behaving mindfully in a given scenario correspond to lower scores, higher scores therefore reflect more mindfulness. Example items include "I could be experiencing some emotion and not be conscious of it until some time later," and "I find myself doing things without paying attention" (Brown & Ryan, 2003; Carlson & Brown, 2005). The MAAS is reported to have an average Cronbach's alpha of 0.87 (Brown & Ryan, 2003). In order to evaluate youth populations, the MAAS was adapted to create the Mindful Attention Awareness Scale—Adolescent (MAAS-A). In terms of scale items, the only difference between the two measures is that the MAAS-A removes Item 12, "I drive places on 'automatic pilot' and then wonder why I went there," as this item would be non-applicable for younger adolescents. The MAAS-A has been validated for use in adolescent populations and has good internal consistency, with Cronbach's alphas ranging from 0.82 to 0.84, as well as high test–retest reliability, with an intraclass correlation of 0.79 (Brown et al., 2011; De Bruin et al., 2011). The current study utilized the original version of the MAAS given that the sample primarily consisted of older adolescents. The MAAS total score demonstrated excellent internal consistency in our sample (α = 0.90 pre-intervention, 0.94 post-intervention). The full MAAS measure is included in Appendix C.

Interpersonal Sensitivity (INT) subscale, Symptom Checklist-90-Revised (SCL-90-**R**). Participants were administered the Interpersonal Sensitivity (INT) subscale of the Symptom Checklist-90-Revised (SCL-90-R) to assess interpersonal effectiveness (Derogatis & Cleary, 1977; Derogatis et al., 1973). The INT subscale measures feelings of personal inadequacy and inferiority, and can also be used to identify feelings of self-deprecation and acute selfconsciousness (Derogatis & Cleary, 1977; Derogatis et al., 1973; Derogatis et al., 1976). Given that the aims of the DBT interpersonal effectiveness skills modules are to help individuals better attend to relationships and interact confidently and comfortably with others, scores on the INT were expected to decrease between baseline and post-treatment assessments. The INT contains ten items and asks participants to indicate how often they were bothered by various interpersonal problems in the past week on a five-point Likert scale, with responses ranging from a score of 0 = Not at All to 4 = Extremely. Example items include "Feeling that people are unfriendly or dislike you" and "Feeling uneasy when people are watching or talking about you" (Derogatis & Cleary, 1977). Higher scores reflect increased interpersonal sensitivity or reduced interpersonal effectiveness. For ease of comparing change scores later in our analyses, these scores were reverse-coded with higher scores representing skill improvement. The INT has good internal consistency with a Cronbach's alpha of 0.86 (Derogatis et al., 1976). The measure has been

shown to be reliable in adolescent populations as well; a study evaluating another DBT program with a sample of 66 adolescents reported a Cronbach's alpha of 0.91 (Lenz et al., 2016). In our sample, the INT scale demonstrated excellent internal consistency ($\alpha = 0.92$ pre-intervention, 0.91 post-intervention). The full INT measure is included in Appendix D.

DBT Skills Subscale (DSS), DBT Ways of Coping Checklist (DBT-WCCL).

Participants were also administered the DBT Skills Subscale (DSS) of the DBT Ways of Coping Checklist (DBT-WCCL) in order to assess how effectively they employ coping strategies in response to distressing events (Neacsiu et al., 2010). The DBT-WCCL itself was adapted from the Revised Ways of Coping Checklist (RWCCL) in order to more comprehensively assess skills relevant to DBT (Neacsiu et al., 2010; Vitaliano et al., 1985). It has also been validated for use with adolescents (Flynn et al., 2018; Lenz et al., 2016). The DSS is a 38-item self-report measure that instructs participants to indicate how often they have used certain thoughts and behaviors to accept and mitigate problems and stresses in the past month. Responses are selected on a fourpoint Likert scale, with responses ranging from a score of 0 = Never Used to 3 = Regularly Used, with the latter selected only when the thought or behavior is used at least four or five times per week. Total scores are reported as an average score of the 38 items. All of the DSS skills represent beneficial coping strategies, with higher scores indicating increased DBT skills use in tolerating distress. Example items include "Told myself how much I had already accomplished" and "Came up with a couple of different solutions to my problem" (Neacsiu et al., 2010). An internal consistency analysis determined that the DSS is a reliable measure of DBT coping skills across different clinical samples, with Cronbach's alphas ranging from 0.92 to 0.96 (Neacsiu et al., 2010). When administered to an adolescent population for the purpose of evaluating another DBT intervention, internal consistency within the sample was excellent ($\alpha = .94$; (Lenz et al.,

2016). The DSS Subscale demonstrated excellent internal consistency in our sample ($\alpha = 0.95$ pre-intervention, 0.97 post-intervention). The full DSS measure is included in Appendix E. **Statistical Analysis**

A priori power analyses were conducted using G*Power to determine the number of participants needed to detect small to medium effect sizes with our desired number of predictors (Faul et al., 2007). Given challenges with participant recruitment, and that the originally planned MANOVA analysis would have required a sample size of 60 participants at each timepoint, the waitlist baseline and two follow up assessment timepoints are not included in the following analyses. The current study therefore utilized a pre-post design to test our hypotheses, with paired *t*-tests conducted to compare pre- and post-intervention differences in DBT core skills and internalizing symptoms, and multiple regression analyses to evaluate whether changes in DBT core skills predicted improvements in internalizing symptoms. All analyses were conducted using statistical analysis software (SPSS, Version 28). There was no need to control for missing data as there were none across each of the outcome measures.

Paired T-Tests. Study Aim 1 was to determine whether there were significant postintervention improvements in core skills (i.e., emotion regulation, mindfulness, interpersonal effectiveness, and distress tolerance) and internalizing symptoms (i.e., depression and total anxiety subscales). Six paired *t*-tests were conducted in order to examine post-intervention changes in each of these outcomes. In comparing mean differences, higher scores would represent improvements in symptoms and skills. Prior to conducting the analyses, we tested for outliers and paired *t*-test assumptions to ensure that the data were approximately normally distributed. Analyses of boxplots were primarily used to evaluate outliers, while a combination of histograms, normality plots, and the results of the Shapiro-Wilks test were used to determine that normality was sufficient to proceed with paired *t*-tests. *A priori* power analyses revealed that with a sample size of 76 participants, we had an 95.4% chance of detecting a truly significant effect of .5 (Cohen's *d*) at alpha = .01. In order to correct for elevated Type I familywise error resulting from running multiple *t*-tests, a *p*-value of 0.01 was considered statistically significant.

Multiple Regressions. Study Aim 2 was to determine whether improvements in DBT core skills (i.e., emotion regulation, mindfulness, interpersonal effectiveness, and distress tolerance) predicted improvements in internalizing symptoms (i.e., depression and total anxiety subscales). Two simultaneous multiple regression analyses were conducted in order test DBT skill change scores as predictors of post-assessment anxiety and depression change scores, respectively. Prior to conducting the analyses, we tested for outliers and the assumptions of multiple linear regression. One case that was found to be high on multiple casewise diagnostics was removed as an outlier. In terms of testing for assumptions, no concerns with multicollinearity, homoscedasticity, and normality were found. Power analyses revealed that with a sample size of 75 participants, we had 82.4% power to detect a truly significant effect of $R^2 = .18$ at $\alpha = .05$, and with four predictors ($f^2 = 0.22$).

Results

Participant Characteristics

A total of 151 high school students were initially screened as eligible for study participation by the lead school guidance counselor. Of these, 117 consented to participate in the intervention, and 27 were recruited at least one month before their respective groups began, allowing them to participate in waitlist baseline assessments. A total of 110 participants ultimately completed the main baseline assessment. Ten of these participants dropped out during the intervention, while 24 others were lost to follow-up and did not complete post-treatment assessments, leaving a final pre-post sample of 76 adolescents between the ages of 15 and 18 who participated in the study (M = 16.72, SD = 0.71). A flowchart depicting study participation is included in Figure 2. The 76 high school students completed the intervention and all of the pre- and post-intervention assessment timepoints, including the RCADS, MAAS, DERS, INT, and DSS. Descriptive statistics, including the means and standard deviations of each of these baseline and post-intervention assessment measures, are included in Table 4. In terms of attendance, participants completed a mean of 6.72 sessions on average (SD = 2.66, mode = 8).

Paired T-Tests

Paired sample *t*-tests were used to assess pre- and post-intervention differences in internalizing symptoms, including depression (RCADS Depression subscale) and anxiety (RCADS Total Anxiety Scale), as well as DBT core skills, including mindfulness (MAAS), emotion dysregulation (DERS), interpersonal effectiveness (INT) and distress tolerance (DSS). A *p*-value of 0.01 was considered statistically significant, and Cohen's *d* was also reported (d = 0.20 small; d = 0.50 medium; and d = 0.80 large). Results of these analyses are included in Table 5.

In terms of internalizing outcomes, we had hypothesized that there would be a significant increases in scores following the intervention, as higher scores represent greater symptom improvement. Differences between depression scores at baseline (M = 16.36, SD = 7.75) and post-assessment (M = 18.20, SD = 7.21) were marginally significant at p = .01 with a small effect size, t(75) = -2.59, d = -0.30. There was no significant difference in anxiety scores between baseline (M = 67.49, SD = 23.96) and post-assessment (M = 72.61, SD = 25.05), though the effect size was small and in the expected direction, t(75) = -2.16, d = -0.25, p = .03. In terms of DBT skills, we had hypothesized that there would be a significant increases in mindfulness,

emotion dysregulation, interpersonal effectiveness, and distress tolerance scores following the intervention, as higher scores represented skill improvement. There was a significant increase in mindfulness scores between baseline (M = 49.54, SD = 14.88) and post-assessment (M = 54.91, SD = 17.10), t(75) = -3.66, d = -0.42, p < .001. Although effect sizes for the remaining outcomes were small and in the expected direction, none of these outcomes were significant at p < 0.01. Non-significant changes in these outcomes are reported as follows: emotion dysregulation at baseline (M = 47.50, SD = 26.47) and post-assessment (M = 53.18, SD = 23.77), t(75) = -2.07, d = -0.24, p = .04; interpersonal effectiveness at baseline (M = 24.01, SD = 10.11) and post-assessment (M = 25.96, SD = 10.12), t(75) = -1.99, d = -0.23, p = .05; and distress tolerance at baseline (M = 58.47, SD = 20.70) and post-assessment (M = 59.78, SD = 25.67), t(75) = -0.50, d = -0.06, p = .62.

Multiple Regressions

Two simultaneous multiple linear regression analyses were conducted to assess whether pre-to-post assessment changes in DBT core skills predicted post-assessment changes in anxiety and depression, respectively. Results of the anxiety model are included in Table 6. The overall regression model accounted for a significant proportion of the variance in anxiety, such that the optimal linear combination of DBT skill change scores (i.e., mindfulness, emotion dysregulation, interpersonal effectiveness and distress tolerance) accounted for 44.1% of the variance in anxiety change scores, $R^2_{adj} = 0.441$, F(4,74) = 15.61, p < .001. Within the model, the emotion dysregulation change score was a significant individual predictor of anxiety change scores, such that as the change in emotion regulation increased by one point, the change in anxiety improvement increased by 0.36 points, holding the influence of all other predictor variables constant, 95% CI [.18, .53], $sr^2 = .12$, p < .001. The interpersonal effectiveness change score was another significant individual predictor of anxiety change scores, such that as the change in distress tolerance increased by one point, anxiety improvement increased by 0.70 points, holding the influence of all other predictor variables constant, 95% CI [.25, 1.16], $sr^2 = .07$, p < .01. The mindfulness change score was not a significant individual predictor of anxiety change scores (95% CI [-.29, .29], $sr^2 = .00$, p > .05), nor was distress tolerance, 95% CI [-.12, .19], $sr^2 = .00$, p > .05.

Results of the depression model are included in Table 7. The overall regression model accounted for a significant proportion of the variance in depression, such that the optimal linear combination of DBT skill change scores (i.e., mindfulness, emotion dysregulation, interpersonal effectiveness and distress tolerance) accounted for 28.1% of the variance in depression change scores, $R^2_{adj} = 0.281$, F(4,74) = 8.24, p < .001. Within the model, the emotion dysregulation change score was a significant individual predictor of depression, such that as the change in emotion regulation increased by one point, the change in depression improvement increased by 0.07 points, holding the influence of all other predictor variables constant, 95% CI .00, .13], $sr^2 = .04$, p < .05. The interpersonal effectiveness change score was another significant individual predictor of depression, such that as the change in interpersonal effectiveness increased by one point, the change in depression improvement increased by one point, the change is increased by 0.22 points, holding the influence of all other predictor of depression, holding the influence of all other predictor of depression improvement increased by 0.22 points, holding the influence of all other predictor variables constant, 95% CI [.06, .39], $sr^2 = .07$, p < .01. The mindfulness change score was not a significant individual predictor of depression change scores (95% CI [-.10, .10], $sr^2 = .03$, p > .05), nor was distress tolerance, 95% CI [-.01, .10], $sr^2 = .03$, p > .05.

Discussion

The purpose of this study was to determine whether a school-based DBT skills intervention would be associated with improved DBT core skills and internalizing symptoms in a community sample of at-risk adolescents. The intervention, Project SOARing, was the first to adapt DBT STEPS-A, a universal social-emotional learning curriculum, to the needs of a Tier 2 adolescent population with elevated levels of emotional distress. As reducing emotion dysregulation is a key target of DBT, applying DBT STEPS-A as a targeted intervention was a natural fit for youth who (1) screened as at-risk for emotion dysregulation difficulties; (2) reside in an under-resourced community; and (3) have been exposed to a variety of chronic stressors and adverse child experiences. As such, the youth who participated in this study were also at-risk for developing internalizing symptoms, including depression and anxiety. In addition to examining the intervention's effectiveness for DBT skills, including emotion regulation, mindfulness, interpersonal effectiveness, and distress tolerance, this study also focused on depression and anxiety as key outcomes that may be reduced in the process of learning and practicing DBT skills. This investigation was also the first to examine the effectiveness of a school-based DBT intervention in reducing internalizing symptoms in at risk-adolescents.

We hypothesized that participation in Project SOARing would significantly predict improved core skills and internalizing symptoms for adolescents in this population. Findings from the current study appear to tentatively support that Project SOARing may be an effective intervention for improving DBT core skills and internalizing symptoms in this particular Tier 2 adolescent sample. Paired *t*-test results revealed significant improvements in mindfulness scores from pre- to post-intervention, p <.001. Paired *t*-test results for four out of the other five outcomes, including anxiety, depression, emotion dysregulation, and interpersonal effectiveness, were also promising and trended in the direction of symptom improvement, although they were not significant after applying a correction to control for familywise error, *ps* <.05. Despite not reaching statistical significance, the effect sizes for each of these outcomes were small, and not negligible, following the 6-week intervention.

Our second hypothesis was that the DBT core skills would provide the mechanisms of change that drive improvements in internalizing symptoms. Two simultaneous multiple linear regressions, one with changes in anxiety as the dependent variable and the other with changes in depression, were used to determine whether the change in DBT core skills predicted internalizing symptom improvements at post-assessment. Results revealed that changes in emotion regulation and interpersonal effectiveness predicted improvements in both anxiety and depression change scores (ps < .05). As emotion regulation and interpersonal effectiveness are the two DBT change skills, these results appear to support the assertion that these skills can help adolescents navigate dysregulation and stressful social situations toward improved mental health outcomes. Each model accounted for a significant proportion of the variance in anxiety and depression change scores (ps < .01). These results, in combination with the trends demonstrated by the paired *t*-tests, appear to support the finding that improvements in DBT skills, and in particular, the "change skills," predicted improvements in depression and anxiety symptoms. Compared to universal prevention programs, adolescents in selective prevention programs have a greater likelihood of symptom worsening over time given the increase in risk status (Horowitz & Garber, 2006). It is therefore notable that despite all outcomes not reaching significance, each outcome in each analysis trended in the direction of symptom and skill improvement, rather than reflecting a deterioration of symptoms.

These results appear to demonstrate the effectiveness of SOARing as a school-based intervention for improving mental health outcomes in at-risk youth. The intervention's impact on DBT skill development and internalizing symptom improvement is particularly encouraging

given its short timeframe and the logistical barriers faced during its implementation, including attendance challenges, limited psychotherapy resources available, competing student obligations/occasional teacher pushback, and the significant psychosocial needs of the student population. Given these real-world constraints and the fact that the intervention was a small pilot trial and the first of its kind, promising statistical findings are all the more indicative of SOARing's potential success as a novel school-based, manualized approach for improving outcomes in similar groups of adolescents. Another strength of the program is the bottom-up approach that was used to initially revise the DBT STEPS-A curriculum based on the recommendations and preferences of students at the continuation high school during the pre-pilot trial (Mazzone et al., 2023). As this preliminary investigation allowed us to derive a program tailored to meet the needs of this particular diverse student body, it is possible that the SOARing intervention may be sustainably implemented similar settings, which have historically been underserved and understudied. Despite the chronic stressors and increased risk of internalizing symptoms in this population, these youth also experience significant logistic and stigma related barriers to care (Santiago et al., 2013; Wadsworth, 2012). School-based approaches like Project SOARing therefore serve as an important entry to mental health services, and when provided with a positive experience, students may be more likely to access these services in the future.

Limitations and Future Directions

There are several limitations to the present study. Because the study design is not randomized nor waitlist-controlled, it is not possible to draw causal conclusions about the results presented above. The initial plan for this study was to incorporate a randomized, waitlistcontrolled design, which would have strengthened study findings and also allowed for comparisons both between and within groups. Unfortunately, time-constraints to recruitment meant that the sample was predominantly convenience-sampled, with eligible participants often assigned to the next block available. These same challenges ultimately led to the exclusion of the waitlist component from the present study, as participants were usually not identified far enough in advance to be included in the waitlist condition. The final waitlist sample size across all groups was 27 participants, and four of these participants dropped from the study prior to completing the second baseline assessment and the intervention. As a result, this waitlist sample was insufficient to incorporate into the present analyses, though other analyses better suited for capturing potential clinical significance within smaller sample sizes could potentially examine between-group differences in the future. Another avenue for future research is to implement a larger SOARing intervention, including a randomized controlled design with more participants and power, in order to provide more methodological rigor to support the program's effectiveness. Future investigations would also benefit from incorporating longer-term follow up points in order to evaluate for sustained changes in internalizing symptoms and DBT skills over time. While all outcome measures were collected at two follow up points, occurring at 6-weeks and 12-weeks after the immediate post-treatment assessment, the sample sizes of these timepoints were again insufficient to be analyzed as part of the present design.

Another important limitation to consider is the threat to external validity. The bottom-up approach of condensing and adapting the DBT STEPS-A manual into a 12-session intervention meant that SOARing was modified to fit the logistical, psychosocial, and cultural imperatives of this particular continuation high school. Given this tailoring, these results may be less applicable to different settings with different age and racial groups or community contexts. Research on the generalizability of these findings has not yet been conducted. Similarly, the DBT STEPS-A manual was originally designed for teachers and other school staff to deliver in traditional school

settings as part of universal prevention programs. In addition to this adaptation being a selective or Tier 2 intervention, the program was also led by psychology doctoral students rather than the school's own educators. As this modification changes how the curriculum was originally intended to be delivered and may impact how it is received by the students, further research is needed in order to support the acceptability of the intervention's delivery by non-school staff, and alternatively, determine SOARing's effectiveness when implemented by school staff. Our team has provided free DBT-STEPS-A training to the school staff in an effort to support sustainability of the program.

One potential confound of these study results, and threat to internal validity, is that there were changes made to the facilitators and delivery of the intervention throughout the two years of its implementation. Steps were taken to ensure that these changes were minimal. For example, all of the doctoral student facilitators had taken a class on DBT skills and were trained and supervised by the same licensed clinical psychologist. Additionally, the graduate students who delivered the intervention during the second year of the intervention had first shadowed and observed the previous year's students in order to preserve fidelity across providers and integrity to the treatment manual. However, there was one intentional change to the delivery of the intervention implemented during its second year. The student co-leader of Project SOARing this year wanted to incorporate a text message adjunct as part of his dissertation research, to determine whether this component resulted in improved attendance and understanding of DBT skills when compared to the first year of the intervention. Though reporting on the results of the text message adjunct is beyond the scope of the present study, it is possible that adolescents who received it experienced improved outcomes, thus marking a discrepancy in intervention delivery between the two years.

Other possible threats to internal validity that were not controlled for during the present study include attrition bias (e.g., if participants with more severe symptoms were more likely to drop out), regression to the mean, and history. It should be acknowledged that the intervention began its implementation as soon as the school resumed in-person classes following the COVID-19 pandemic shutdown. It is possible that students experienced natural improvements in mood throughout the course of the intervention, and between groups, as they "bounced back" from the increased stress and isolation that they experienced when school was online (Elharake et al., 2022). Conversely, it is possible that participants experienced lasting psychological consequences from the pandemic and experienced declines in mood compared to either their own baselines or peers in more affluent settings, as research suggests that economically disadvantaged students experienced more severe and prolonged stressors during this time (Singh et al., 2020; Van Lancker & Parolin, 2020). Future studies would benefit from either controlling for these threats or examining them as potential auxiliary variables.

Clinical Implications

Despite the limitations described and the finding that not all of the outcomes analyzed were statistically significant, the results of the current investigation did yield promising results to support Project SOARing's effectiveness as a school-based, Tier 2 intervention for underserved adolescents. In particular, mindfulness scores were associated with significant improvements following the intervention, while the other DBT skills also demonstrated clinically meaningful improvements as well. Additionally, DBT skill improvements predicted a significant proportion of the variance in anxiety and depression symptoms change scores, appearing to support the hypothesis that DBT skills may be used to increase coping and reduce internalizing psychopathology. In particular, the DBT change skills (i.e., emotion regulation and interpersonal

effectiveness) were shown to be significant individual predictors of changes in depression and anxiety.

These findings expand the current DBT literature base to include more support for school-based DBT interventions, in addition to providing one of the first-ever protocols to target a selective, at-risk population of adolescents. The empirical support for SOARing provided by the current study means that adolescents from similarly underserved and understudied communities may be able to benefit from future iterations of the intervention, which is important given the paucity of evidence-based interventions designed with their contextual needs in mind. Youth who experience increased poverty-related risk-factors and chronic stressors are more at risk for the development of emotion regulation difficulties, depression, and anxiety; thus, there is a great need for these types of secondary prevention interventions (Evans & Kim, 2013; Santiago et al., 2012). The tailoring modifications made during the SOARing pre-pilot trial, as well as the screening that occurred to recruit participants who were at-risk for emotion dysregulation difficulties, help to support that the intervention may be appropriate for adolescents experiencing similar challenges to mental health and wellbeing.

Some other important clinical implications to consider is that this study appears to lend support to the idea that if emotion dysregulation exacerbates internalizing symptoms, then building emotion regulation skills may help to ameliorate these problems. These findings are aligned with Marsha Linehan's biosocial model, in which emotion dysregulation is conceptualized as underlying many mental health conditions, including borderline personality disorder (Linehan, 1993). As DBT is specifically designed to target this underlying emotion regulation dysfunction, it can be used as a treatment for a variety of mental health issues. It is plausible then, that adolescents who experience an increased risk of emotion dysregulation and the development of internalizing symptoms as a result of chronic, accumulative stressors, may particularly benefit from learning DBT skills (Criss et al., 2016). However, as evidenced by the present literature review, there are a limited number of published studies that have examined the efficacy of DBT on adolescent depression and anxiety, especially within underserved youth (Boustani et al., 2024). This research is therefore among the first to explore this unique intersection of systemic vulnerability, its indirect impact on adolescent internalizing symptomatology via emotion dysregulation, and the use of DBT skills to improve these outcomes. Further research is needed to expand upon the present investigation and add more statistical rigor, though as the first of its kind to evaluate a DBT skills intervention as applied to this context, it presents a promising avenue for similar studies. Additionally, the study took advantage of being situated within a school-based intervention, which have been shown to reduce many barriers to youth mental health care (Masia-Warner et al., 2006). It is our hope that future researchers examining the effectiveness of DBT skills for similar adolescent populations will consider the benefits of delivering their interventions within school settings as well.

Conclusions

Research suggests that depression and anxiety are prevalent problems that impair functioning and mental wellbeing in youth, and that they are often found in increased rates among underserved and economically disadvantaged youth. In addition to the more transparent connections between early adversity and psychological distress, a theory explaining these increased rates is that a combination of harmful contextual and community-level factors leads to accumulative stress. In turn, accumulative stress negatively impacts individuals' abilities to emotionally regulate, resulting in more difficulty with coping and a higher likelihood of experiencing depression and anxiety. Early intervention initiatives, and especially in underresourced populations, school-based interventions, are crucial for providing evidence-based mental health support in order to disrupt this cycle. As DBT interventions specifically target emotion dysregulation, they may be particularly well-suited for adolescents who have been exposed to accumulative stress. The purpose of this study was to examine whether participating in a school-based, DBT skills intervention would be associated with increased DBT skills (e.g., mindfulness, emotion regulation, interpersonal effectiveness, and distress tolerance) and improved depression and anxiety symptoms in a diverse sample of high school students who prescreened as at-risk for emotion dysregulation difficulties. The results suggest that the DBT skills intervention, Project SOARing, demonstrated preliminary effectiveness across several of these outcomes. In particular, results from paired *t*-tests indicate a positive trend in improved DBT skills and internalizing outcomes, including statistically significant improvements in mindfulness. Additionally, results of hierarchical multiple linear regressions indicated that changes in most DBT core skills predicted changes in internalizing symptoms, which suggests that improvements in these skills may lead to internalizing symptom reductions. Overall, these promising findings highlight a novel approach for addressing the specific needs of this population and leveraging the development of socioemotional skills to improve mental health outcomes. Further research should adopt similarly collaborative, bottom-up approaches when designing and implementing interventions with understudied youth samples. Future investigations can also use randomized controlled approaches to expand upon these findings and more firmly establish the link between DBT skill growth and improved internalizing outcomes in adolescents.

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Demographic Information (N = 76)

	n (%)
Age $(M = 16.72, SD = 0.71)$	
15	1 (1.3%)
16	29 (38.2%)
17	35 (46.1%)
18	10 (13.2%)
Missing	1 (1.3%)
Gender	
Male	28 (36.8%)
Female	45 (59.2%)
Nonbinary	3 (3.9%)
Ethnicity	
Hispanic/Latino	56 (73.7%)
Black/African American	9 (11.8%)
Hispanic/Latino and White/Caucasian	6 (7.9%)
White/Caucasian	2 (2.6%)
Black/African American and Native American	1 (1.3%)
Native American	1 (1.3%)
Hispanic/Latino and Samoan	1 (1.3%)
Sexual Orientation	
Heterosexual	46 (60.5%)
Bisexual	14 (18.4%)
Gay/Lesbian	9 (11.8%)
Pansexual	4 (5.3%)
Asexual	1 (1.3%)
Demisexual	1 (1.3%)
Missing	1 (1.3%)

Participants Endorsing Psychosocial Stressors

	n (%)
Adverse Childhood Experiences	
History of abuse or violence	12 (15.8%)
History of abandonment	12 (15.8%)
Adopted or history of foster care	8 (10.5%)
Academic-Related Stressors	
Receives an Individualized Educational Plan (IEP)	19 (25.0%)
Self-reported below average academic functioning	12 (15.8%)
Family History	
Mental illness	21 (27.6%)
Drug use	19 (25.0%)
Psychological History	
Current psychotropic medication	6 (7.9%)
Head trauma or seizures	4 (5.3%)
Substance Use	
Past	7 (9.2%)
Current	7 (9.2%)

SOARing DBT Skills Group Manual

Week	Theme	Session Outline
1	Orientation	Names/Introduction • Overview, icebreakers, and limits to confidentiality Review/Develop Rules Orientation to Group Structure/Timing Every Week
2	Mindfulness	 Mindfulness Exercise Starburst/Chocolate exercise - look, feel, texture, smell, taste Review - Rules Skill - Wise Mind (Page 376) Three States of Mind - reasonable mind (what I THINK to be), emotion mind (what I FEEL to be), and wise mind (what I KNOW to be) Emotion Volcano Drawing Activity
3	Interpersonal Effectiveness	 Mindfulness Exercise Guided meditation (2 minutes) Review - Wise Mind Skill - Validation (Page 470) Validation: show that you understand your or another person's feelings or opinions. Be nonjudgmental out loud
4	Distress Tolerance	 Mindfulness Exercise Five Senses - 5 you can see, 4 you can feel, 3 you can hear, 2 you can smell, 1 you can taste Review - Validation Skill - TIP (Page 396-397) Explanation of emotional arousal with examples TIP: Temperature, Intense Exercise, Paced Breathing Breathing meditation with plastic ice cubes
5	Emotion Regulation	 Mindfulness Exercise Guided Meditation (2 minutes) Review - TIP Skill - Purpose of Emotions (Page 421-422) List emotions with action indicated, how we communicate it, function of emotion
6	Interpersonal Effectiveness	 Mindfulness Exercise Mindful Seeing - switch one item on body and see who notices what is different Review - Purpose of Emotions Skill - DEARMAN (Page 467-469)

		 DEARMAN: <u>Describe</u>, <u>Express</u>, <u>Assert</u>, <u>Reinforce</u>, be <u>Mindful</u>, <u>Appear confident</u>, <u>Negotiate</u>
7	Distress Tolerance	 Mindfulness Exercise Guided meditation (3 minutes) Review - DEARMAN Skill - IMPROVE (Page 392-394) IMPROVE: Imagery, Meaning, Prayer, Relaxation, One thing at a time, Vacation, Encouragement
8	Emotion Regulation	 Mindfulness Exercise Leaves on a Stream - guided meditation for 3 minutes Review - IMPROVE Skill - Opposite Action (Page 435-436) Opposite Action: acting opposite to the action urge when the emotion is doing more harm than good
9	Interpersonal Effectiveness	 Mindfulness Exercise Penny Exercise - mindful seeing Review - Opposite Action Skill - FAST and GIVE (Page 470-474) FAST: be <u>Fair</u>, no <u>Apologies</u>, <u>Stick to values</u>, be <u>Truthful</u> GIVE: be <u>G</u>entle, act <u>Interested</u>, <u>Validate</u>, use an <u>Easy manner</u>
10	Distress Tolerance	 Mindfulness Exercise Body Scan - toes to top of head Review - FAST and GIVE Skill - ACCEPTS (Page 388-390) ACCEPTS: <u>A</u>ctivities, <u>C</u>ontributing, <u>C</u>omparisons, <u>E</u>motions, <u>P</u>ushing away, <u>T</u>houghts, <u>S</u>ensations
11	Emotion Regulation	 Mindfulness Exercise Guided Meditation (3 minutes) Review - ACCEPTS Skill - Cope Ahead (Page 451) Cope Ahead: cope ahead of time with emotional situations by rehearsing a plan ahead of time so you are prepared
12	Debrief	 Mindfulness Exercise Guided Meditation (3 minutes) Review – Cope Ahead Brief Discussion – Radical Acceptance Acknowledging the reality of our lives for problems that cannot be solved in the long term Final check-in, questionnaires, and feedback

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Variable	Baseline Mean (SD)	Post-Test Mean (SD)
Anxiety (RCADS ANX)	67.49 (23.96)	72.61 (25.05)
Depression (RCADS MDD)	16.36 (7.75)	18.20 (7.21)
Mindfulness (MAAS)	49.54 (14.88)	54.91 (17.10)
Emotion Dysregulation (DERS)	47.50 (26.47)	53.18 (23.77)
Interpersonal Effectiveness (INT)	24.01 (10.11)	25.96 (10.12)
Distress Tolerance (DSS)	58.47 (20.70)	59.78 (25.67)

Note. RCADS = Revised Child Anxiety and Depression Scales, MAAS = Mindfulness Attention Awareness Scale, DERS = Difficulties in Emotion Regulation Scale, INT = Interpersonal Sensitivity subscale of the Symptom Checklist-90-Revised, DSS = DBT Skills Subscale of the DBT Ways of Coping Checklist.

	Baseline	Post-Test				
Variable	M (SD)	M(SD)	<i>t</i> (df)	<i>p</i> -value	95% CI	Cohen 's d
RCADS ANX	67.49 (23.96)	72.61 (25.05)	-2.16 (75)	.034	[-9.83,40]	25
RCADS MDD	16.36 (7.75)	18.20 (7.21)	-2.59 (75)	.011	[-3.26,43]	30
MAAS	49.54 (14.88)	54.91 (17.10)	-3.66 (75)	<.001**	[-8.29, -2.45]	42
DERS	47.50 (26.47)	53.18 (23.77)	-2.07 (75)	.042	[-11.15,22]	24
INT	24.01 (10.11)	25.96 (10.12)	-1.99 (75)	.050	[-3.89,00]	23
DSS	58.47 (20.70)	59.78 (25.67)	50 (75)	.616	[-6.46, 3.85]	06

Paired T-Test Results of Pre- and Post-Treatment Outcomes

Note. RCADS = Revised Child Anxiety and Depression Scales, ANX = Anxiety Subscale, MDD = Depression Subscale, MAAS = Mindfulness Attention Awareness Scale, DERS = Difficulties in Emotion Regulation Scale, INT = Interpersonal Sensitivity subscale of the Symptom Checklist-90-Revised, DSS = DBT Skills Subscale of the DBT Ways of Coping Checklist. **p < .001.

Results of a Multiple Regression Analysis Predicting Changes in Anxiety from Changes in DBT Skills

Predictor Variable	b	95% CI	β	<i>p</i> -value	sr^2	pr^2
Change in MAAS	.00	[29, .29]	.00	.976	.00	.00
Change in DERS	.36	[.18, .53]	.45	<.001***	.12	.19
Change in INT	.70	[.25, 1.16]	.32	.003**	.07	.12
Change in DSS	.04	[12, .19]	.04	.643	.00	.00

Note. MAAS = Mindfulness Attention Awareness Scale, DERS = Difficulties in Emotion Regulation Scale, INT = Interpersonal Sensitivity subscale of the Symptom Checklist-90-Revised, DSS = DBT Skills Subscale of the DBT Ways of Coping Checklist. *p < .05.

Results of a Multiple Regression Analysis Predicting Changes in Depression from Changes in DBT Skills

Predictor Variable	b	95% CI	β	<i>p</i> -value	sr^2	pr^2
Change in MAAS	.00	[10, .10]	00	.993	00	00
Change in DERS	.07	[.00, .13]	.27	.040*	.04	.06
Change in INT	.22	[.06, .39]	.32	.008**	.07	.10
Change in DSS	.05	[01, .10]	.18	.087	.03	.04

Note. MAAS = Mindfulness Attention Awareness Scale, DERS = Difficulties in Emotion Regulation Scale, INT = Interpersonal Sensitivity subscale of the Symptom Checklist-90-Revised, DSS = DBT Skills Subscale of the DBT Ways of Coping Checklist. *p < .05.

Figure 1



Flowchart of Study Schedule for Each Year

Note. Due to sample size, Waitlist Baseline and Follow Up 2 timepoints are not included analyzed as part of the present study.

Figure 2

Study Participant Flowchart



Appendix A

Revised Child Anxiety and Depression Scales (RCADS)

Date: Name/ID:				
Please put a single around the word that shows be	CADS	of these things	hannan ta	vou Thors are
no right or wrong answers.	w onen each	for these things	nappen to	you. There are
1. I worry about things	Never	Sometimes	Often	Always
2. I feel sad or empty	Never	Sometimes	Often	Always
 When I have a problem, I get a funny feeling in my stomach 	Never	Sometimes	Often	Always
 I worry when I think I have done poorly at something 	Never	Sometimes	Often	Always
5. I would feel afraid of being on my own at home	Never	Sometimes	Often	Always
6. Nothing is much fun anymore	Never	Sometimes	Often	Always
7. I feel scared when I have to take a test	Never	Sometimes	Often	Always
8. I feel worried when I think someone is angry with me	Never	Sometimes	Often	Always
9. I worry about being away from my parents	Never	Sometimes	Often	Always
10. I get bothered by bad or silly thoughts or pictures in my mind	Never	Sometimes	Often	Always
11. I have trouble sleeping	Never	Sometimes	Often	Always
12. I worry that I will do badly at my school work	Never	Sometimes	Often	Always
 I worry that something awful will happen to someone in my family 	Never	Sometimes	Often	Always
14. I suddenly feel as if I can't breathe when there is no reason for this	Never	Sometimes	Often	Always
15. I have problems with my appetite	Never	Sometimes	Often	Always
 I have to keep checking that I have done things right (like the switch is off, or the door is locked). 	Never	Sometimes	Often	Always
17. I feel scared if I have to sleep on my own	Never	Sometimes	Often	Always
18. I have trouble going to school in the mornings because I feel nervous or afraid	Never	Sometimes	Often	Always
19. I have no energy for things	Never	Sometimes	Often	Always
20. I worry I might look foolish	Never	Sometimes	Often	Always
21. I am tired a lot	Never	Sometimes	Often	Always
22. I worry that bad things will happen to me	Never	Sometimes	Often	Always

23. I can't seem to get bad or silly thoughts out of my head.	Never	Sometimes	Often	Always
24. When I have a problem, my heart beats really fast	Never	Sometimes	Often	Always
25. I cannot think clearly	Never	Sometimes	Often	Always
26. I suddenly start to tremble or shake when there is no reason for this	Never	Sometimes	Often	Always
27. I worry that something bad will happen to me	Never	Sometimes	Often	Always
28. When I have a problem, I feel shaky	Never	Sometimes	Often	Always
29. I feel worthless	Never	Sometimes	Often	Always
30. I worry about making mistakes	Never	Sometimes	Often	Always
 I have to think of special thoughts (like numbers or words) to stop bad things from happening 	Never	Sometimes	Often	Always
32. I worry what other people think of me	Never	Sometimes	Often	Always
 I am afraid of being in crowded places (like shopping centers, the movies, buses, busy playgrounds). 	Never	Sometimes	Often	Always
34. All of a sudden I feel really scared for no reason at all	Never	Sometimes	Often	Always
35. I worry about what is going to happen	Never	Sometimes	Often	Always
36. I suddenly become dizzy or faint when there is no reason for this	Never	Sometimes	Often	Always
37. I think about death	Never	Sometimes	Often	Always
38. I feel afraid if I have to talk in front of my class	Never	Sometimes	Often	Always
39. My heart suddenly starts to beat too quickly for no reason	Never	Sometimes	Often	Always
40. I feel like I don't want to move	Never	Sometimes	Often	Always
 I worry that I will suddenly get a scared feeling when there is nothing to be afraid of 	Never	Sometimes	Often	Always
42. I have to do some things over and over again (like washing my hands, cleaning or putting things in a certain order)	Never	Sometimes	Often	Always
43. I feel afraid that I will make a fool of myself in front of people	Never	Sometimes	Often	Always
44. I have to do some things in just the right way to stop bad things from happening	Never	Sometimes	Often	Always
45. I worry when I go to bed at night	Never	Sometimes	Often	Always
46. I would feel scared if I had to stay away from home overnight	Never	Sometimes	Often	Always
47. I feel restless	Never	Sometimes	Often	Always

Appendix B

The Difficulties in Emotion Regulation Scale

Difficulties in Emotion Regulation Scale (DERS)

Please indicate how often the following statements apply to you by writing the appropriate number from the scale below on the line beside each item. 2 4 ~

	222		44	·
almost never	sometimes	about half the time	most of the time	almost always
(0-10%)	(11-35%)	(36-65%)	(66-90%)	(91-100%)
1) I am o	clear about my feelings.			
2) I pay	attention to how I feel.			
3) I expe	erience my emotions as	overwhelming and out of contr	ol.	
4) I have	e no idea how I am feeli	ing.		
5) I have	e difficulty making sens	e out of my feelings.		
6) I am a	attentive to my feelings.			
7) I kno	w exactly how I am feel	ling.		
8) I care	about what I am feelin	g.		
9) I am (confused about how I fe	el.		
10) Whe	en I'm upset, I acknowle	edge my emotions.		
11) Whe	en I'm upset. I become a	angry with myself for feeling th	at wav.	
12) Whe	en I'm upset. I become e	embarrassed for feeling that wa	v.	
13) Whe	en I'm upset. I have diff	iculty getting work done.	5	
14) Whe	en I'm upset. I become o	out of control.		
15) Whe	en I'm upset. I believe t	hat I will remain that way for a	long time.	
16) Whe	en I'm upset. I believe tl	hat I will end up feeling very de	epressed	
17) Whe	en I'm upset. I believe t	hat my feelings are valid and in	portant	
18) Whe	en I'm upset. I have diff	iculty focusing on other things	iportuniti	
19) Whe	en I'm upset. I feel out o	of control		
20) Whe	en I'm upset. I can still o	get things done		
20) Whe	en I'm upset. I feel asha	med at myself for feeling that y	vav	
22) Whe	en I'm upset. I know that	t I can find a way to eventually	feel better	
22) Whe	en I'm upset. I feel like	I am weak	icei octioi.	
23) Whe	en I'm upset. I feel like	I can remain in control of my h	ehaviors	
21) Whe	en I'm upset. I feel quilt	y for feeling that way	chaviors.	
25) Whe	en I'm upset. I have diff	iculty concentrating		
20) Whe	en I'm upset. I have diff	iculty controlling my behaviors	2	
28) Whe	en I'm upset. I helieve ti	here is nothing I can do to make	e myself feel better	
20) Whe	en I'm upset. I become i	rritated at myself for feeling th	at way	
20) Whe	on I'm upset. I start to fe	el very had about myself	at way.	
30) Whe	en I'm upset. I believe fl	hat wallowing in it is all I can d	lo	
32) Whe	en I'm upset. I lose cont	rol over my behavior		
32) Who	n I'm upset. I have diff	iculty thinking about anything	alca	
34) Whe	on I'm upset I take time	to figure out what I'm really fe	eling	
35) Whe	n I'm upset it takes me	a long time to feel better	ening.	
36) Whe	en I'm upset, it takes inc	a long time to reer better.		
50) with	ems (place a subtraction	n sign in front of them) are num	abered 1 2 6 7 8 10 17	20 22 24 and 34
^{alculate total e}	core by adding everyt	hing up Higher scores suggest	greater problems with em	$\frac{120, 22, 24}{100}$ and $\frac{54}{100}$
UBSCALE SC	ORINC**• The measu	re vields a total score (SUM) a	s well as scores on six sub	scales.
Nonaccentanc	e of emotional response	\sim (NONACCEPT) \cdot 11 12 21	23 25 20	-scales.
Difficulty eng	aging in Goal-directed l	behavior (GOALS): 13-18-20	23, 23, 23 P 26 33	
Impulse contr	aging in Obai-unecteu i	(COALS): 15, 16, 20 (E): 3 14 10 24P 27 32	K, 20, 33	
I agle of emoti	onal awaranaga (AWAE	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	7D 24D	
Lack of effolt	onal awareness (AWAF	stratagies (STDATECIES): 15	16 22D 28 20 21 25	26
Look of are the	s to entotion regulation	$(31 \times 10^{\circ} \text{ (}31 $, 10, 22K, 20, 30, 31, 33,	20
. Lack of emoti	of all subseeles	J. 1K, 4, 3, /K, 9		
with the second	or an subscales			
K indicates r	everse scored item			

REFERENCE:

Gratz, K. L. & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the Difficulties in Emotion Regulation Scale. Journal of Psychopathology and Behavioral Assessment, 26, 41-54.

Appendix C

The Mindfulness Attention Awareness Scale (MAAS)

The Mindful Attention Awareness Scale (MAAS)

The trait MAAS is a 15-item scale designed to assess a core characteristic of mindfulness, namely, a receptive state of mind in which attention, informed by a sensitive awareness of what is occurring in the present, simply observes what is taking place.

Brown, K.W. & Ryan, R.M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, *84*, 822-848.

Carlson, L.E. & Brown, K.W. (2005). Validation of the Mindful Attention Awareness Scale in a cancer population. *Journal of Psychosomatic Research*, 58, 29-33.

Instructions: Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer according to what really reflects your experience rather than what you think your experience should be. Please treat each item separately from every other item.

1	2	3	4	5	6
almost	very	somewhat	somewhat	very	almost never
always	frequently	frequently	infrequently	infrequently	

1. I could be experiencing some emotion and not be conscious of it until some time later.

- 2. I break or spill things because of carelessness, not paying attention, or thinking of something else.
- 3. I find it difficult to stay focused on what's happening in the present.
 - 4. I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.
- 5. I tend not to notice feelings of physical tension or discomfort until they really grab my attention.
- 6. I forget a person's name almost as soon as I've been told it for the first time.
- 7. It seems I am "running on automatic," without much awareness of what I'm doing.
 8. I rush through activities without being really attentive to them.
- 9. I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.
- 10. I do jobs or tasks automatically, without being aware of what I'm doing.
- 11. I find myself listening to someone with one ear, doing something else at the same
- time.
- 12. I drive places on 'automatic pilot' and then wonder why I went there.
- 13. I find myself preoccupied with the future or the past.
- 14. I find myself doing things without paying attention.
- 15. I snack without being aware that I'm eating.

Scoring: To score the scale, simply compute a mean (average) of the 15 items.

Appendix D

Interpersonal Sensitivity (INT) subscale of the Symptom Checklist-90-Revised (SCL-90-R)

Below is a list of problems and complaints that people sometimes have. Please read each one carefully and enter the number that best describes how much you were bothered by that problem during the past week.

Please enter only ONE.

FOR THE PAST WEEK, HOW MUCH WERE YOU BOTHERED BY:

	Not At All	A Little Bit	Moderately	Quite A Bit	Extremely
Feeling critical of others	0	0	0	0	0
Feeling shy and uneasy with the gender you are attracted to	\circ	0	0	\circ	\bigcirc
Your feelings being easily hurt	0	0	0	0	0
Feeling others do not understand you or are unsympathetic	0	0	0	0	0
Feeling that people are unfriendly or dislike you	0	0	0	0	0
Feeling inferior to others	0	0	0	0	0
Feeling uneasy when people are watching or talking about you	0	0	0	0	0
Feeling very self-conscious with others	\bigcirc	\bigcirc	0	0	\bigcirc
Feeling uncomfortable about eating or drinking in public	0	0	0	0	0
Feeling that you are watched or talked about by others	0	0	0	0	0

Appendix E

DBT Skills Subscale (DSS) of the DBT Ways of Coping Checklist (DBT-WCCL)

The items below represent ways that you may have coped with stressful events in your life. We are interested in the degree to which you have used each of the following thoughts or behavior to deal with problems and stresses.

Think back on the <u>LAST ONE MONTH</u> in your life. Then check the appropriate number if the thought/behavior is: never used, rarely used, sometimes used, or regularly used (i.e., at least 4 to 5 times per week). Don't answer on the basis of whether it seems to work to reduce stress or solve problems -just whether or not you use the coping behavior. Use these response choices. Try to rate each item separately in your mind from the others. Make your answers as true FOR YOU as you can.

l have:				
	Never Used	Rarely Used	Sometimes Used	Regularly Used
Focused on the good aspects of my life and gave less attention to negative thoughts or feelings	0	0	0	0
Told myself how much I had already accomplished	0	0	0	0
Tried to get centered before taking any action	0	0	0	0
Made sure I respond in a way so that I could still respect myself afterwards	0	0	0	0
Focused on the good things in my life	0	0	0	0
Accepted my strong feelings, but did not let them interfere with other things too much	0	0	0	0
Increased the number of pleasant things in my life so that I had a more positive outlook	0	0	0	0
Made a plan of action and followed it	0	0	0	0
Made sure to take care of my body and stay healthy so that I was less emotionally sensitive	0	0	0	0
Found something beautiful to look at to make me feel better	0	0	0	0
Stepped back and tried to see things as they really are	0	0	0	0
Concentrated on something good that could come out of the whole thing	0	0	0	0

Came up with a couple of different solutions to my problem	0	0	0	0
Pampered myself with something that felt good to touch (e.g., a bubble bath or a hug)	0	0	0	0
Talked to someone about how I've been feeling	0	0	0	0
Focused my energy on helping others	0	0	0	0
Just took things one step at a time	0	0	0	0
Changed something about myself so that I could deal with the situation better	0	0	0	0
Did something to feel a totally different emotion (like gone to a funny movie)	0	0	0	0
Tried not to act too hastily or follow my own hunch	0	0	0	0
Talked to someone to find out about the situation	0	0	0	0
Been aware of what has to be done, so I've been doubling my efforts and trying harder to make things work	0	0	0	0
Occupied my mind with something else	0	0	0	\bigcirc
Made sure I'm responding in a way that doesn't alienate others	0	0	0	\bigcirc
Talked to someone who could do something concrete about the problem	0	0	0	0
Told myself things could be worse	0	0	0	0
Tried to distract myself by getting active	0	0	0	\bigcirc
Counted my blessings	0	0	0	0
Changed something so things would turn out right	0	0	0	0
Accepted the next best thing to what I wanted	0	0	0	0
Stood my ground and fought for what I wanted	0	0	0	0
Treated myself to something really tasty	0	0	0	0
Soothed myself by surrounding myself with a nice fragrance of some kind	0	0	0	0
Tried not to burn my bridges behind me, but leave things open somewhat	0	0	0	0
Thought how much better off I was than others	0	0	0	0
Compared myself to others who are less fortunate	0	0	0	0
Bargained or compromised to get something positive from the situation	0	0	0	0
Listened to or played music that I found relaxing	0	0	0	0