SUPPORTING DISASTER IMPACTED YOUTH: EVALUATION OF A UNIVERSALLY DELIVERED ONLINE MINDFULNESS INTERVENTION

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I dedicate this dissertation to my children, Riley and Raven. You are the light of my life. The world is a better place because you are in it and I am so proud to be your mom. Thank you for inspiring and motivating me to be the very best that I can be.

Lokah Samastah Sukhino Bhavantu

"May all beings everywhere be happy and free, and may the thoughts, words, and actions of my own life contribute in some way to that happiness and to that freedom for all."

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(Under the Direction of Dr. Aaron M. Thompson, PhD.)

There is an increase in youth-reported traumatic stress, youth behavioral health problems, and an upward trend in the prevalence and severity of large-scale disasters within the US. Youth are especially vulnerable to adverse behavioral health problems following a disaster. Many young people do not seek treatment for their behavioral health problems and this discrepancy is magnified by various obstacles to successfully implementing school-based behavioral health interventions to youth impacted by disasters. Youth experiencing internalizing symptoms and youth of color are disproportionately impacted by disaster-related stress and are less likely to receive behavioral health interventions after a disaster. As such, researching the impact of universally delivered programs for this population is warranted. The current study seeks to examine the feasibility and initial efficacy of an online adaptation of the *Dynamic Mindfulness* program in a quasi-experimental, within-group/ pretest-posttest design, with 44 youth, ages 11-17. The evidence demonstrates that the online adaptation of the selected youth mindfulness program was feasible, acceptable, and related to significant, short-term, pretest to posttest improvements in several of the targeted outcomes and reveals a significant relationship between youth-reported mindfulness and various social and emotional outcomes within study participants, warranting continued inquiry within this scope of research.

Chapter 1

Introduction

A Statement of the Problem

Stress and Trauma

Youth traumatic stress rates are prevalent and increasing. Stressors are demands made by the environment (either internal or external) that upset the balance or homeostasis within an individual and can affect one's physical and psychological well-being (Glanz, et al., 2008; Lazarus, 1966; Lazarus & Folkman, 1984). Stress can be categorized as either acute, chronic or traumatic. An individual may experience acute stress during challenging life events, whereas chronic stress is thought to be the daily toll of life experiences and demands (McKee, et al., 2003). A certain amount of acute and chronic stress is considered a normal part of life, but traumatic stress can leave a lasting impact and cause strong emotional and physiological responses long after a traumatic event has occurred. According to the National Childhood Traumatic Stress Network (NCTSN), traumatic stress is a reaction to a frightening, dangerous, or violent event that potentially threatens an individual's health and safety (n.d). Many people may experience traumatic stress due to physical, emotional or sexual abuse, or traumatic grief and loss on an individual level, but events such as natural and man-made disasters, discrimination, and other forms of institutionalized racism can cause a detrimental impact on societies at large (Glanz, et al., 2008; NCTSN, n.d). The occurrence of traumatic stress in the lives of youth has a detrimental impact on youth behavioral health.

Youth Behavioral Health

Behavioral health problems are defined as, "behaviors that compromise a person's mental or physical wellbeing" (Hawkins, et al., 2016, p.3). Even amongst the general population, youth behavioral issues are substantial. It is estimated that 25% of youth—one in four adolescents aged 13-18—will experience an anxiety disorder (Merikangas, et al., 2011) and about one in five youth will experience a major depressive disorder during adolescence to a degree that adversely impacts daily functioning (Hawkins et al., 2015). Evidence suggests that youth behavioral health diagnoses are on the rise. A report by the American Psychological Association (APA, 2019) states that, "more U.S. adolescents and young adults in the late 2010's versus the mid-2000's experienced serious psychological distress, major depression or suicidal thoughts and more attempted suicide" (p.1) and a recent report from the Centers for Disease Control (CDC) states the suicide rate among youth aged 10 to 24 increased 56% between 2007 and 2017 (Curtin & Heron, 2019). Further, a study by Twenge and colleagues (2019) indicates the rates of:

- major depression has increased 52% in adolescents from 2005-2017
- serious psychological distress rose 71% from 2008-2017
- suicidal thoughts increased 47% from 2008-2017

Youth behavioral health problems are often linked with mental and physical health detriments and various life-adjustment issues. Well-cited literature has linked childhood stress to subsequent behavioral health outcomes including depression, anxiety, emotional dysregulation, conduct problems and other aggressive behavior, suicide attempts, substance abuse and dependence, behavioral disorders, and chronic physical health diagnoses (Breslau et al., 2000; Breslau et al., 2003; Hawkins, et al., 2016;

Magruder et al., 2016; McLaughlin et al., 2012; Smith & Carlson, 1997). These stressors and behavioral health concerns magnify in the presence of a disaster.

Impact of Disaster Related Traumatic Stress on Youth Behavioral Health Outcomes

The National Center for Post-Traumatic Stress Disorder (PTSD; 2010) states that there are several common emotional, cognitive, physical and interpersonal reactions that one may experience after a disaster. Emotional reactions can include shock, fear, grief, anger, guilt, shame, and feeling helpless or numb. Cognitive reactions may include confusion, indecisiveness, worry, shortened attention span, or trouble concentrating. Physical reactions may involve tension, fatigue, edginess, insomnia body aches or pains, feeling easily startled, racing heartbeat, nausea, and a change in appetite or sex drive. Finally, one may experience interpersonal reactions including but not limited to distrust, conflict, withdrawal, work or school problems, irritability, loss of intimacy, feelings of rejection or abandonment (VA National Center for PTSD, 2010).

Large-scale disasters are prevalent and worldwide. Whether manmade (acts of war, terrorism or displacement) or natural (earthquakes, fires, tsunamis, pandemics) in its cause, the impacts of disasters are experienced by millions (U.S. Department of Veterans Affairs, 2017). It is reported that within the United States, major disaster strikes at least once per week (North, et al., 2012). It is true that many of the millions of people who experience a disaster will recover on their own, however many will not. There are many risk factors for increased stress reactions from disaster-related stress and trauma, but no population is more vulnerable than children (U.S. Department of Veterans Affairs, 2017).

High estimates of behavioral health problems are reported within studies of children and adolescents exposed to disasters (Fairbank, 2009). PTSD prevalence for

childhood survivors of disasters ranges anywhere from 50-75% (Fairbank, 2009). Furthermore, a study with youth survivors of the 9/11 attack in New York City reported that over 60% of those children had already experienced another significantly traumatic event in their lifetime (Fairbank, 2009). This is significant because PTSD is an indicator of further stress reactions for future events. If left untreated, the cycle of stress and trauma warrant concern for future generations as well. According to Fairbank (2009), "We know that children exposed to trauma- especially those with multiple experiences- are particularly vulnerable to a range of psychological, behavioral and emotional problems, social maladjustments, academic failures" (p.3). If left untreated, these problems can have life-long implications for children, who will eventually grow up to become parents and therefore influence their own children.

Particularly relevant to the current study, preliminary evidence suggests that the COVID-19 pandemic has a negative impact on youth behavioral health. Liang et al., (2020) report a high prevalence of PTSD (14.4%) and other psychological problems (40.4%) for the 584 Chinese youth involved in their study. They conclude that "this was a remarkable evidence that infectious diseases, such as COVID-19, may have an immense influence on youth mental health" (p.1). Rogers et al., (2020) conducted a survey with 407 US adolescents and document youth perceptions of social and emotional changes associated with the pandemic to include elevated depression, anxiety and loneliness and decreased positive affect and social support. Another study from Hertz & Barrios (2020) found that youth impacted by the pandemic report similar symptoms, including worry, irritability, acting out, eating and sleeping changes, depression and PTSD.

These statistics indicate the critical need for appropriate youth behavioral health services. Unfortunately, there are significant barriers to accessing critical care within the general population and especially for disaster-impacted youth.

Barriers to Implementing and Accessing Treatment for Disaster-Impacted Youth

The lack of successful screening creates under-detection of behavioral health problems in youth, especially for those with internalized behavioral health problems. Long-standing institutionalized racism and discrimination creates disproportionality both in terms of mental illness prevalence and in terms of barriers to appropriate behavioral health services for youth of color. These issues are compounded when disaster-related events create obstacles to school-based behavioral health service implementation for disaster-impacted youth.

Lack of Successful Screening and Detection. Behavioral health problems for *all* youth often go undiagnosed and untreated. Of the 25% of youth who struggle with behavioral health symptoms, it is estimated that up to 80% of these youth never access care (Merikangas et al., 2011). Further, symptom severity has been identified as significant determining factor in receiving care, yet half of adolescents with *severe* behavioral health problems never get the services they need (Merikangas, et al., 2011). Youth with internalizing symptoms experience even more barriers to timely screening and effective treatment than do youth exhibiting externalized problems. The Child Mind Institute (2018) indicates that only one percent of youth seek treatment within the first year of anxiety symptoms. Findings also suggest that youth with attention-deficit/hyperactivity disorder (ADHD) and other disruptive behavior disorders are much

more likely to be appropriately diagnosed and treated than are youth suffering from anxiety, depression and other internalizing disorders (Merikangas et al., 2011).

Institutionalized Racism and Discrimination. Not only are youth of color more likely to experience stress and subsequent behavioral health problems, but they are also less likely to seek support services needed to treat those problems. Black youth are two times more likely to be diagnosed with a mental illness and one and a half times less likely to seek help (Magee & Thompson, 2019; McGuire & Miranda, 2008). The trend is comparable for Hispanic youth. Hispanic youth reportedly experience higher rates of anxiety and other mental health diagnoses, yet they receive treatment for their symptoms at approximately one-half of the rate of their white counterparts (Cook et al., 2013; Merianos, et al., 2014; Merikangas et al., 2011; US Department of Health and Human Services, 2003). Similar challenges are also present for Asian and other youth of color (Magee & Thompson, 2019). For these youth, their racial minority status increases the likelihood that they will experience symptoms of a behavioral health problem and decreases the likelihood that they will receive an accurate diagnosis or effective treatment.

There are several additional barriers to effective youth behavioral health treatment including cultural stigma of mental illness and help-seeking behavior, financial, transportation and communication/language barriers, acculturation, enculturation and an overall lack of affordable and culturally competent services (Magee & Thompson, 2019; Merianos, et al., 2014) making school-based interventions the most common setting for such services (Costello, et al., 2011, Fu & Underwood, 2015, NCTSN, n.d.). However, school-based interventions are not always possible during or following a disaster.

Pfefferbaum, et al., (2014) conducted a systematic literature review to examine the common timing and setting of behavioral health interventions for disaster-impacted youth and discovered many cited obstacles to school-based delivery during or immediately following a disaster. These obstacles include disruption to in-person school attendance, damages to school building infrastructure, elevated teacher, staff and administration-reported stress and trauma levels, lack of funding or licensed mental health professionals, insufficient private space for the delivery of interventions and a competing interest of balancing students' academic, physical and emotional well-being (Pfefferbaum, et al., 2014). During or immediately following a disaster is a vulnerable time for young people, yet paradoxically, it is also a time when the most common delivery setting for such interventions may become disrupted or altogether unavailable for these youth, implicating the need for various behavioral health delivery methods and implementation strategies.

A Universal Approach to Public Health Interventions for Disaster-Impacted Youth

According to Dahlburg & Krug (2006), "public health is not about individual patient. Its focus is on dealing with diseases and with conditions and problems affecting health and it aims to provide the maximum benefit for the largest number of people" (p.278). By nature, public health is interdisciplinary (Dahlburg & Krug, 2006) and over the past several decades has expanded in focus from symptom alleviation towards a broader scope of health promotion and disease prevention (Hawkins et al., 2015). Within the public health model, The Institute of Medicine (IOM) has identified three levels of prevention. The first tier includes universal programs, or primary prevention. Universal programs attempt to reach all individuals within a selected audience without regard to

level of risk or exposure. Universal programs are usually implemented when more than 20% of the population is at risk (Thompson et al., 2017). The second tier includes secondary prevention, or selective programs. Selective programs target individuals who have risk factors associated with a health condition, but do not yet have manifested behavioral health diagnoses. Selected programs are usually implemented when less than 20% of the population is at risk (Thompson et al., 2017). The third tier includes tertiary prevention or indicated programs. Indicated programs target individuals who show signs and symptoms of a behavioral health problem and seeks to alleviate and lesson their symptomology (Hawkins et al., 2015; IOM, 1994). Approximately 5% of the population experiences behavioral health concerns to a degree that adversely impacts their daily functioning warranting indicated behavioral health services (Thompson et al., 2017).

There is sufficient evidence to support the use of universally delivered public health interventions to promote positive behavioral health and to reduce behavioral health risks within the general population of youth (Skeen, et al., 2019) and there is also burgeoning evidence to support the efficacy of implementing universal programs with disaster-impacted youth (Fu & Underwood, 2015). Further, there is evidence to suggest that universal services can be implemented with flexibility in terms of timing and service delivery type, making its application amenable to various previously mentioned obstacles for service delivery. Pfefferbaum, et. al. (2014) reported that the universal application of disaster-support for youth has been successfully implemented across all phases of a disaster and there is evidence to support both short term and long-term delivery of post-disaster programs that can be offered both individual and in groups amongst a wide variety of settings

Conclusion

The available evidence suggests that there is an increase in reported stress and stress-related behavioral health problems, especially among young people. Many people may recover naturally from disaster-related stress and trauma, but many do not, and children are the most vulnerable persons in any population regarding risk to long-term behavioral health problems. Many young people do not seek care to treat their behavioral health problems and this problem is further magnified by various obstacles to successfully implementing behavioral health interventions to youth impacted by disasters. Chapter Two will discuss the literature for the feasibility and effect of universal, online interventions that address stress and trauma for disaster-impacted youth.

Chapter 2

A Review of the Literature

Chapter one documented the prevalence of youth stress and its relation to behavioral health outcomes, as well as the special needs and treatment implications for youth impacted by disaster related stress. Chapter two will review the literature to summarize the feasibility and effects of behavioral health interventions for disaster-impacted youth. Specifically, Social and Emotional Learning-based Mindfulness Interventions are explored as viable universal interventions that can be modified for online delivery within the targeted population.

Empirical Evidence to Support Universal Health Programs

A meta-analysis by Skeen and associates (2019) reviewed 158 studies providing universal interventions to youth ages 10-19 and found that, "that universally delivered interventions can improve adolescent mental health and reduce risk behavior" (p.8). Specifically, identified studies were categorized according to 25 various program components and effect sizes (ES) were observed across four different outcome areas. Of central importance to the current study, researchers found that: emotional regulation program components (ES=.33) and relaxation program components (ES=.23) produced small treatment effects on the promotion of positive mental health and mindfulness program components produced small treatment effects on the prevention of anxious and depressive symptomology (ES=-.27; Skeen, et al.,2019). The generalizability of these findings is limited however, as they were mostly included from higher-income settings, limiting applicability to low- and middle-income communities and making no reference to treatment effect according to race, gender or socio-economic status (SES).

Health Promotion Versus Health Prevention

According to the World Health Organization (WHO; 2004), health promotion often involves, "considering mental health as a resource, as a value to its own and as a basic human right essential to social and economic development" (p.16). By contrast, health prevention or harm reduction strives to "reduce risk factors and enhance protective factors associated with ill-health" (WHO, 2004, p.16). The aim of health promotion is to optimize positive health and the aim of health prevention is to minimize the problems associated with an illness (Youth.gov, n.d.). Both health promotion and health prevention programs can occur within the three tiers by targeting all people regardless of risk (universal), those who are at increased risk (selective) and those already diagnosed with health problems (indicated; WHO, 2004). There is considerable overlap between health promotion and health prevention, and it is possible to promote health and prevent or mitigate the risk of behavioral health problems simultaneously. The distinction between health promotion and prevention can best be identified by understanding the key reported outcomes of the intervention (WHO, 2004). Universal health promotion programs can have positive effects on youth' self-esteem, motivation and self-efficacy and programs that focus on social, emotional, and behavioral health have been found to have an immediate positive impact on youth' well-being (Das et al., 2016). Universal prevention programs can be successful in school-aged children by reducing mental health symptoms by 60% (Child Mind Institute, 2018). Specifically, health prevention efforts have demonstrated effectiveness in reducing depression, anxiety, substance abuse, suicide, conduct disorder and other delinquent, aggressive and otherwise unhealthy behaviors (Academy Health, 2018; Hawkins et al., 2018). Again, these reviews gave no indication

of treatment effects according to race, gender, age, or SES, so generalizability of these findings are limited.

One of the clear benefits to universal interventions, is its ability to integrate various health promotion and health prevention strategies and treatment components to impact multiple correlated health outcomes for their intended audiences (Skeen, et al., 2019). Given the previously mentioned risks associated with disaster-related stress on youth behavioral health outcomes and the barriers to effectively disaster-related behavioral health services, the remainder of this literature review will focus on the specific benefits of delivering universal behavioral health interventions to disaster-impacted youth and to explore the appropriateness of various commonly implemented universal health programs for disaster-impacted youth.

Universal Behavioral Health Interventions for Disaster-Impacted Youth

Within the current study, *universal health intervention strategies for disaster-impacted youth* indicates that *all* youth are eligible for treatment, regardless of their level of disaster exposure or current trauma or mental health symptomology. There is a growing evidence base on youth disaster behavioral health interventions (namely, Trauma-Focused Cognitive Behavior Therapy, Cognitive Behavioral Intervention for Trauma in Schools, Psychological First Aid and Skills for Psychological Recovery, (NCTSN, n.d.), interventions that deliver within a selected or indicated model of care have been intentionally omitted from the current review and only programs that pertain to a universally delivered models of care are discussed.

In a meta-analysis conducted by Fu and Underwood (2015), it was reported that 11 studies offering universally delivered interventions for disaster-impacted youth had

statistically significant improvements for both youth impacted by natural disasters (ES=−.31, 95% CI=−.54– −0.07, z=−2.58, p=.01) and youth residing in conflicted areas (ES= −.51, 95% CI=−0.80 to −0.23, z=−3.57, p<.001) in terms of a reduction of PTSD scores for the treatment group, as compared with control groups. No other meta-analyses on universal behavioral health interventions for youth impacted by disasters were identified in the review of the literature.

Of the 12 post-disaster, universally implemented, intervention studies utilized in their systematic review, (Pfefferbaum, et al.,2014) indicated that most interventions documented favorable outcomes in "PTSD, anxiety reactions, depression, somatic complaints, anger, dissociative symptoms, grief, hope and functioning" (p.7). Core components of this systematic review included: coping skill development, affect processing techniques, and stress management (Pfefferbaum, et al.,2014).

Web-Based Universal Behavioral Health Interventions for Youth Impacted by Disaster

A systematic review by Clarke et al., (2015) studied 28 articles examining the effectiveness of online universal behavioral health interventions for youth and found that "there is some evidence that skills-based interventions presented in a module-based format can have a positive impact on adolescent mental health, however an insufficient number of studies limits this finding" (p.89). The results from this study indicate a favorable influence on anxiety and depression symptoms in participants, however, non-completion rates were moderate to high across several studies, indicating the need for future research examining factors affecting, exposure, adherence and outcomes (Clarke, et al., 2015).

The previously mentioned meta-analysis by Skeen et al., (2019) compared the effect sizes of program components and outcome areas between face-to-face and online interventions and found similarly trending, but consistently smaller effect sizes for positive mental health (*ES*=.25 for face-to-face and *ES*=.18 for online) and depression and anxiety symptoms (*ES*=-.10 for face to face and *ES*=-.08 for online) at a 2 month follow up time period.

One article studying the impact of universal online behavioral interventions for disaster-impact youth was identified in this literature review. In this randomized control trial that studied the feasibility and initial efficacy of a universally delivered web intervention for adolescents affected by the Joplin Missouri tornado, researchers reported fewer PTSD and depressive symptoms for adolescents in the experimental versus control conditions at 12-month follow-up (PTSD: $B = -.36$, $SE = .19$, $p = .06$; depressive symptoms: $B = -.42$, $SE = .19$, $p = 0.03$; Ruggiero, et al., 2015).

In summary, there is budding evidence to support the use of universally delivered online behavioral health interventions for disaster-impacted youth. Universal behavioral health interventions offer wide-reaching audiences while combining health promotion and health risk prevention outcomes irrespective of a participant's risk level and symptomology. Online formatting of such intervention give opportunity to reach youth during high-risk times despite the possibility of school service disruption. Therefore, selecting a universally deliverable intervention favorable for an online adaptation is the focus in the remainder of this literature review.

Social and Emotional Learning Interventions

According to the Collaborative Association for Social and Emotional Learning (CASEL), Social and Emotional Learning (SEL) is SEL is "the process through which all young people and adults acquire and apply the knowledge, skills, and attitudes to develop healthy identities, manage emotions and achieve personal and collective goals, feel and show empathy for others, establish and maintain supportive relationships, and make responsible and caring decisions" (CASEL, n.d.). The SEL framework includes five key competencies (self-awareness, social awareness, self-management, responsible decision-making, and healthy relationships) as identified by CASEL (n.d.). CASEL (n.d.) further states that implementing SEL programs can improve many positive behavioral, emotional, and academic outcomes for youth, and it is understood that teaching children healthy skills in each of these areas have lasting impact on skill level, social behavior and lower levels of distress (Durlak & Mahoney, 2019).

A large-scale longitudinal analysis of a randomized, control intervention studying the impact of a universal SEL program with 2,937 youth found increased authority acceptance ($p<0.001$, $ES=.02$), cognitive concentration ($p<0.001$, $ES=.12$) and social competence ($p<0.001$, $ES=.34$; Bierman, et al., 2010). A meta-analysis by Durlak, et al., (2011) reviewed 213 school-based SEL programs with kindergarten to high schools youth (n=270,034) and found statistically significant ($p\leq 0.05$) results including the promotion of SEL skills ($ES=.57$), an increase in reported positive attitudes ($ES=.23$), positive social behavior ($ES=.24$), and academic performance ($ES=.27$) and a decrease in conduct problems ($ES=.22$) and emotional distress ($ES=.24$; Durlak et al., 2011). A metal-analysis by Sklad et al., (2012) reviewed 75 publications and found highly

significant findings (p<0.005) in seven major categories (social skills, antisocial behavior, substance abuse, positive self-image, academic achievement, mental health and prosocial behavior for universal social, emotional and behavioral school programs. Finally, another meta-analysis, reviewing 82 school based SEL interventions with kindergarten to high school youth (n=97,406) found statistically significant ($p\leq 0.05$) effect sizes for SEL skills (*ES*=.17), academic performance (*ES*=.22), and emotional distress (*ES*=.12) as compared to the control group participants (Taylor et al., 2017). These findings are of particular importance to the current study due to the previously discussed correlation between youth stress and behavioral health outcomes.

Mindfulness-Based Interventions

Mindfulness-Based Interventions (MBI's), like universal SEL programs, focus on introducing and practicing social, emotional and cognitive strategies that have been shown to improve coping and reduce stress to improve behavioral health. MBI's are highly amenable to universal prevention programs because MBI's primarily focus on universal strengths and vulnerabilities in youth, rather than on specific problems (Bögels et al., 2008; Rempel, 2012). Preliminary meta-analyses for MBI's demonstrate promise for positive youth behavioral health outcomes, with small to medium effect sizes. Zoogman and Associates (2014) conducted the first meta-analysis studying the impact of MBI's on youth and reported a small to moderate effects, (*ES*=.23, p<0.001). They also reported a significantly larger effect size for psychological symptoms compared to other dependent types (*ES* = .37 versus *ES*=.21, p=0.03) within the 20 identified articles (Zoogman et al., 2014). Another systemic review and meta-analysis published in 2014 identified 24 studies for review of which 19 utilized a control group. For the 1,348

identified youth, Zenner et al. (2014) reported significant findings ($p<.05$) for increased cognitive performance ($g=.80$), resilience ($g=.36$) and decreased stress ($g=.39$) and emotional problems (g=.19; Zenner et al., 2014). Another review involved 76 studies and 6,121 participants. When effect sizes were aggregated using meta-regression analysis, MBI's were associated with small treatment effects using pre-post design ($g=0.462$) and controlled designs ($g=.322$; Klingbeil et al., 2017). However, treatment effects were larger at follow-up than post-treatment in both groups as well ($g=.462$) for pre-post groups and ($g=.402$) for controlled groups (Klingbeil et al., 2017).

There is growing evidence to support the incorporation of yoga into traditional MBI's rather than solely focusing on attentional control for the treating of a wide variety of mental and physical health concerns through targeted, adult-level interventions (Field, 2016; Spinazzola, et al.,2011; Van der Kolk, et al.,2014). However, the efficacy of universal mindful movement interventions for youth is relatively unknown (Khalsa & Butzer, 2016). Yoga is a comprehensive mind-body practice involving the integrated components of controlled breathing, rhythmic physical movements, and a state of mindfulness (Spinazzola, et al.,2011). Because there are several forms or subtypes of yoga—we will hereafter refer to this subtype of MBI practice as "mindful movement".

A systematic review by Riley (2015), demonstrates that the benefits of mindful movement practice include psychological aspects associated directly with mindfulness (positive attitudes toward stress, calmness and appraisal of control) and also include several biological benefits (regulation of the autonomic nervous system, hypothalamic-pituitary-adrenal axis and inflammatory and endocrine responses). A systematic literature reviews indicates that adding mindful movement to static mindfulness programs is a

"viable and potentially efficacious strategy for improving child and adolescent health and therefore worthy of continued research" (Khalsa & Butzer, 2016, p.45). Findings from a review of nine randomized controlled trials (RCT's) utilizing mindful movement with grade school youth demonstrated a reduction in tension and anxiety and improved self-esteem and mood from dynamic movement, when compared to the control groups (Field, 2016). Field (2016) additionally identified one RCT for high school youth, which reported significant (p<.001) increased emotional regulation, grade point averages, emotional sensitivity and decreased stress for the dynamic movement participants. A literature review by Serwacki & Cook-Cottone (2012) identified 12 single-cohort, quasi-experimental or RCT design studies indicating an increased perceived self-concept, emotional balance, and decreased anxiety, negative behavior, and body dissatisfaction. An RCT conducted with 62 high school youth showed a significant (p=.01) increase in emotional regulation with dynamic movement participants as compared to the control group (Daly et al., 2015). A systemic review by Ferreira-Vorkapic et al., (2015) identified nine RCT's with detected effect size for mood indicators, tension and anxiety, self-esteem, and memory when compared to control groups. No meta-analysis studying the impact of mindful movement on youth outcomes was identified, however preliminary findings from these systematic reviews, and RCT studies clearly demonstrate the potential impact of adding dynamic movement and breathwork to a universal youth mindfulness intervention.

Comparing SEL and Mindfulness Practices

The practice of mindfulness, and dynamic movement can serve as an experiential enhancement to SEL programs, allowing youth not only to learn the competencies, but to

integrate them into their daily experiences (Avila, 2019). This is of particular importance because while SEL programs can often be successful with younger youth, the psychoeducational nature often makes older youth and adolescents less receptive to typical SEL programs, even at a time when they would most benefit from the curriculum (Yeager, 2017). However, Yeager (2017) further reports that adolescents are most receptive to SEL programs that focus on enhanced mindset and climate—two important contributions of mindfulness.

Similarities between Mindfulness and SEL

Both Mindfulness and SEL programs seek to provide benefits to the whole student through primary prevention interventions. Similarly, there are many overlapping positive outcomes for Mindfulness and SEL programs such as increased academic achievement and wellbeing, less risky behavior and better relationships with peers and teachers (Lantieri &Zakrewski, 2015). Mindfulness practice is closely associated with self-awareness, the core competency of SEL and outcomes from mindfulness research demonstrate improvements in the other core competencies of SEL (self-management, social awareness, relationship skills and decision-making).

Differences between Mindfulness and SEL

Although complimentary by nature, there are several distinctions be made between mindfulness and SEL focused programs. MBI's can be seen as an "inside out" technique "drawing on the premise that each person has the innate capacity for relationship-building qualities such as empathy and kindness" (Latieri & Zakrewski, 2015, p.2). Whereas SEL can be seen as an "outside in" technique with a focus on teaching skills. SEL further assumes that this process is enough to "enable youth to use

the skill in all relevant, real-life situations" (Latieri & Zakrewski, 2015, p.2). Each practice also has its own limitation in managing classroom behaviors and relationships. SEL without mindfulness cannot teach youth to observe and understand their emotional triggers and behavioral patterns whereas mindfulness without SEL cannot give youth concrete social skills such as using "I" messages (Latieri & Zakrewski, 2015). According to Brensilver (2016), further understanding of the differences between Mindfulness and SEL can be understood by looking at core components within each treatment framework. Within practices, SEL relies upon psychoeducation and interpersonal skill development and MBI's mostly focuses on attentional training. SEL promotes conceptual learning and MBI's emphasizes implicit learning. In regard to skills, SEL focuses on creating positive collaborations within classrooms and communities and MBI's focuses on self-regulation. MBI's are less goal oriented as emphasis on particular outcomes can be seen to undermine the introspective process (Brensilver, 2016).

Integrating SEL and MBI

MBI and SEL programs can be complimentary and serve as an enhancement to one another. Dr. Amy Saltzman (2014) has defined mindfulness as "paying attention, here and now, with kindness and curiosity and then choosing your behavior" in her manualized mindfulness curriculum for youth (p.29). Inherent in this child-friendly definition is the implication for possible benefits and outcomes. When we understand our thoughts and feelings, we can more consciously choose our behavior. Therefore, the process and projected outcomes of MBI's can be promoted as an adjunct enhancement to SEL programming by enhancing not only child outcomes but also social and environmental outcomes. According to Brensilver (2016), there are many ways in which

MBI's may support and enhance SEL programming. First, the primary construct of mindfulness (attentional control) is directly related to the first core competency of SEL (self-awareness). Secondly, the mindfulness practice of equanimity (non-judgement or acceptance of experiences) can serve as a resource for reducing impulsivity. Thirdly, the attentional training of mindfulness programs is associated with task performance and has been positively linked to reading comprehension and other cognitive abilities. Lastly, mindfulness training may be beneficial in promoting prosocial attitudes and behavior which compliments the SEL competencies of relationship skills and social awareness (Brensilver, 2016). Due to the complimentary nature of these two types of universal behavioral health programs, a review of literature for existing SEL based mindfulness programs will be the focus for the remainder of this literature review.

CASEL-Endorsed Mindfulness Programs

The CASEL website (CASEL, 2015) lists four CASEL-endorsed youth mindfulness programs: *.b, Kripalu Yoga in Schools, Learning to BREATHE* and *Dynamic Mindfulness* by Transformative Life Skills (*DMind*).

.b

.b is a mindfulness program for youth aged11-18. According to CASEL (2015),. b "focuses on developing attention training skills which, in turn, are associated with strategies and techniques for managing anxiety and reactivity and improving sleep, self-esteem, and concentration". *.b* can be implemented with flexibility in terms of the duration and number of sessions offered. In terms of feasibility and trainer requirements, *.b* can be taught by classroom teachers who have completed their own course of mindfulness training, who also engage in regular daily mindful practice and who have

completed the *.b* training. One study testing the efficacy of *.b* was found in this literature review. This non-randomized control feasibility study (Kuyken et al., 2013) examined the impact of *.b* with 522 youth (aged 12–16) from 12 different secondary schools. They reported high program acceptability, a decrease in depressive symptoms (p= .004) at post-test) and (p=.005) at follow up, and a decrease in reported stress (p= .05) and an increase of well-being (p=0.05) at follow up.

Kripalu Yoga in Schools

Kripalu Yoga in Schools is a 24- session yoga curriculum that focuses primarily on self-management and real-life applications (CASEL, 2015). Each *Kriplalu Yoga in Schools* lesson contains centering/breathing exercises, information, experiential activities, warm-ups, yoga poses, relaxation, and closure. The *Kripalu Yoga in the Schools* curriculum is designed to be implemented by certified yoga teachers who have completed both a 200-hour yoga teacher training and a 60-hour *Kripalu Yoga in Schools* teacher training which creates significant barriers to program feasibility. One small, randomized control study examined the impact of *Kripalu Yoga in Schools* with 51 predominantly white high school youth. They found that intervention participants had decreased mood disturbance (p=.015), decreased anxiety (p=.002) and negative affect (p=.006) compared to youth assigned to treatment as usual (physical education class; Noggle et al., 2012).

Learning to BREATHE

The *Learning to BREATHE* curriculum can be taught in six or eighteen sessions. Created primarily for high school youth, *Learning to BREATHE* teaches six primary course lessons on body, reflections, emotions, attention, tenderness, healthy mind habits and empowerment (Broderick & Metz, 2009). Teachers who have completed eight, two-

hour *Learning to BREATHE* training sessions are eligible to teach the curriculum. Three research articles were located for the *Learning to BREATHE* curriculum. A pilot study with a non-randomized control group reports that treatment participants experienced a statistically significant ($p<.05$) decrease in tiredness aches and pains and an increase in emotional regulation when compared to the control group with small to medium treatment effects (Broderick &Metz, 2009). A quasi-experimental study with 216 predominantly white high school youth reported high acceptability and decreased stress levels ($p=0.005$), decreased difficulties in emotional regulation ($p=.02$), a decreased in the lack of emotional awareness ($p=.02$), a decreased in the limit of access to regulation strategies ($p=.04$), decrease in the lack of emotional clarity ($p=.05$) a decreased in psychosomatic complaints ($p=.02$) and an increase in affective self-regulatory efficacy ($p=.001$; Metz et al., 2013). The final article, a within group pilot study with 23 at risk youth males, revealed statistically significant ($p<.05$) favorable results on the self-esteem and perceived stress measures with small to medium effect sizes (Eva & Thayer, 2017).

Dynamic Mindfulness

CASEL also endorses *Dynamic Mindfulness* (*DMind*), a program that stands apart in that it integrates mindful movement along with traditional MBI practices and reports program impacts on a demographically diverse group of participants. Further, *DMind* curriculum has a high satisfaction rating, with 99% of educators, stating that the program has enhanced their own personal wellbeing and professional practice (Niroga, n.d.). As such, *DMind* is the intervention targeted for under the current study and therefore will be discussed in greater detail.

DMind appears to have the most rigorous research to date of all the CASEL-endorsed mindfulness programs that include mindful movement. Regarding program effectiveness, the foundation's website (Niroga, n.d.), exhibits three peer-reviewed publications demonstrated the effectiveness of the *DMind* program. Results from one article evaluated the impact of *DMind* for two different pilot studies. The first study examined the impact of *DMind* on incarcerated youth compared to a non-randomized group and found a decrease in perceived stress (p=.04) and self-control (p=.02; Ramadoss, & Bose, 2010). Participants from this study were mostly female (56%) and mostly black (73%) and most of the participants were between the ages of 16-17 years old (65%) (Ramadoss, & Bose, 2010). The second study from this same article examined the impact of the *DMind* curriculum with largely diverse (35.6 % black, 23.7% Hispanic, 17.2 % Asian, 16.7% Caucasian and 2.5% Filipino) urban public high school. The program was delivered to 15 classrooms and three classrooms were selected as a control group. 472 youth were selected to participate in the intervention and three classrooms (85 youth) served as a control. Results demonstrated a significant decrease in reported stress (p=.002; Ramadoss & Bose, 2010). Another article utilized a quasi-experimental pre-post study design with 49 demographically diverse, high-risk youth, attending an alternative education school in an urban inner-city school district and demonstrated significantly significant changes in anxiety (ES=.23), depression (ES=.32), global psychological distress (ES=.40), thought rumination (ES=.81), intrusive thoughts (ES=.83), physical arousal (ES=.81), emotional arousal (ES=.97), revenge motivation (ES=.80) and overall hostility (ES=.30; Frank, et al., 2014). Finally, a randomized control trial studying the impact of *DMind* curriculum on 159, 6th and 9th grade youth in a diverse (16.8% black,

5.8% white, 1.3% Asian, 54.2% Hispanic and 21.9% mixed race), inner-city charter school demonstrated significant improvements in unexcused absences (*ES*=.86), detentions (*ES*=.33) and significant increases in school engagement (*ES*=.45; Frank et al., 2017). Additionally, this study yielded significant reductions in attitude violence (*p*=.05), primary coping (*p*=.01), secondary coping (*p*=.01), emotion regulation (*p*=.03), positive thinking (*p*=.05) and cognitive restructuring (*p*=.01; Frank et al., 2017).

Conclusion

A review of the literature suggests that universal intervention programs have the potential to reach large populations of youth, regardless of race and SES background, ensuring that our most vulnerable youth have equal access to obtaining valuable behavioral health services. This model of care is particularly relevant in terms of providing interventions to disaster-impacted youth. Initial research supports both universal and online delivery of appropriate behavioral health interventions to youth impacted by disasters, but the literature documenting the combination of both is practically nil. Two common universally implemented youth behavioral health frameworks, SEL programs and MBI's have clearly demonstrated decades of impact on youth behavioral health outcomes. Further, the core components within these interventions are complementary and there is research to support the idea that combining aspects of SEL programs and MBI's may enhance youth behavioral health outcomes. The CASEL website (CASEL, 2021) lists four CASEL-endorsed youth MBI's. Of these listed programs, only two promote mind-body connection within the curriculum (*Kripalu Yoga in Schools* and *DMind).* Between these two programs, *DMind*, stands apart from the others in terms of training and cost feasibility, documented program satisfaction and an

intentional inclusion of vulnerable youth in the selected population in previous research. As such, the *DMind* curriculum has been selected for online adaptation in this feasibility study and will herein be described as the *DMind Online Group Project*. Next, Chapter 3 will give theoretical orientation will illustrate the proposed theory of change for the *DMind Online Group Project*.

Chapter 3

An Integrated Theory of Change

In the prior chapter, we established that universally delivered online interventions have the potential to improve disaster-impacted youth behavioral health outcomes and that SEL and MBI's, when combined, have enhanced health promotion and health prevention benefits. The current chapter provides an integrated theoretical framework to illustrate how the *DMind Online Group Project* operates in efforts to improve the targeted Stress Resilience, Social and Emotional Learning and Mindfulness outcomes. The integrated theoretical framework informing the present study draws upon the constructs embedded in the Transactional Stress and Coping Theory (TSCT) along with key concepts from the Social Emotional Learning framework and Mindfulness Theory. First, TSCT highlights the primary key psychoeducational component (stress resilience) of the curriculum. Secondly, the SEL framework is presented to explain the focus and importance of the remaining three psychoeducational components of the curriculum (self-awareness, emotion regulation and healthy relationships). Finally, Mindfulness Theory lends further understanding to the mechanisms of change within the intervention and the interrelationship between the psychoeducational and experiential activities within the *DMind Online Group Project*.

Transactional Stress and Coping Theory (TSCT)

The Transactional Stress and Coping Theory (TSCT) and its implications for health behavior are derived from numerous branches of research including epidemiology, personality psychology, cognitive and social psychology, and medicine **(**Glanz, et al., 2008). The earliest work on stress theory began in the 1930's with a primary focus on the

individual fight or flight response and continued to evolve until it became a formalized theory of "transactions" between an individual and her environment with a recognized set of physiological and behavioral responses (Glanz, et al., 2008; Lazarus, 1966; Lazarus & Folkman, 1984). Since its earliest inception, Folkman's TSCT has recognized stress as a central feature of mental health (Lazarus & Folkman, 1984). Stress is seen as a natural result from an imbalance the daily demands encountered by an individual's perceived ability to cope with those demands (Lazarus & Folkman, 1984, Rönnlund et al., 2015). It is an individual's perception of the stressor and their ability to cope with it that has the biggest influence over wellbeing. Williams and Associates (1997) report that, "the stressfulness of a life experience is determined, in part, by the meaning it has for the individual, which is importantly linked to that individual's personal and social history. A respondent's perception and appraisal of a life experience is a critical component to the experience of stress" (p. 347). Thus, when youth feel overwhelmed by life experiences and have a lack of confidence in their ability to cope with these challenges, emotional and behavioral health problems ensue.

Concepts and definitions of TSCT

Primary appraisal is the subjective process whereby an individual assesses their situation for potential threat whereas ***secondary appraisal*** is the process of evaluating one's ability to cope with the perceived threat (Baumeister & Vohs, 2007). ***Coping*** is defined as an individual's thoughts and actions aimed at managing specific demands (Krohne, 2002). Coping strategies (both positive and negative) can be emotion-focused or problem-solving. Emotion-focused coping strategies (passive coping) are actions aimed at changing the way one thinks or feels about a stressful situation whereas problem-

solving coping, or active coping, involve actions directed at changing a stressful situation (Glanz, et al., 2008). An individual uses passive coping to indirectly reduce emotional tension resulting from problem, whereas active coping involves both awareness of the problem and intentional steps towards to either alleviate the stressor or increase internal or external resources needed to handle the stressor (Choi et al., 2012). ***Risk factors*** are experiences or exposures to circumstances that increase the likelihood that an individual will develop negative outcomes, when compared to the general population (Smith & Carlson, 1997). Risk factors can include characteristics of an individuals or families, social contexts and interactions between a person and their environment (Smith & Carlson, 1997).

The concepts of ***trauma***, ***resilience,*** and ***self-efficacy*** are related to the constructs inherent to TCST and are of central importance to the current study. When stressful experiences exceed our ability to adaptively cope, they may become traumatic, which is to say, they have lasting and detrimental effects. ***Trauma*** symptoms can include affective, behavioral, cognitive, interpersonal and/or physical difficulties (Cohen, et al., 2010). Children exposed to trauma have been exposed to one or more adverse events and have developed reactions that persist and affect their daily lives after the events have ended (NCTSN, n.d.). ***Resilience,*** taken from Resilience theory, can be characterized in three ways. First, it be analogous to coping; "efforts to restore or maintain equilibrium under significant threat" (Smith & Carlson, 1997, p.236). Second, it can be viewed as "recovery in the face of trauma". Finally, resilience can be viewed as the "presence of protective factors, or the positive moderators between the relationship of stress and risk". (Smith & Carlson, 1997, p.236). A central construct to social cognition theory, ***self-***

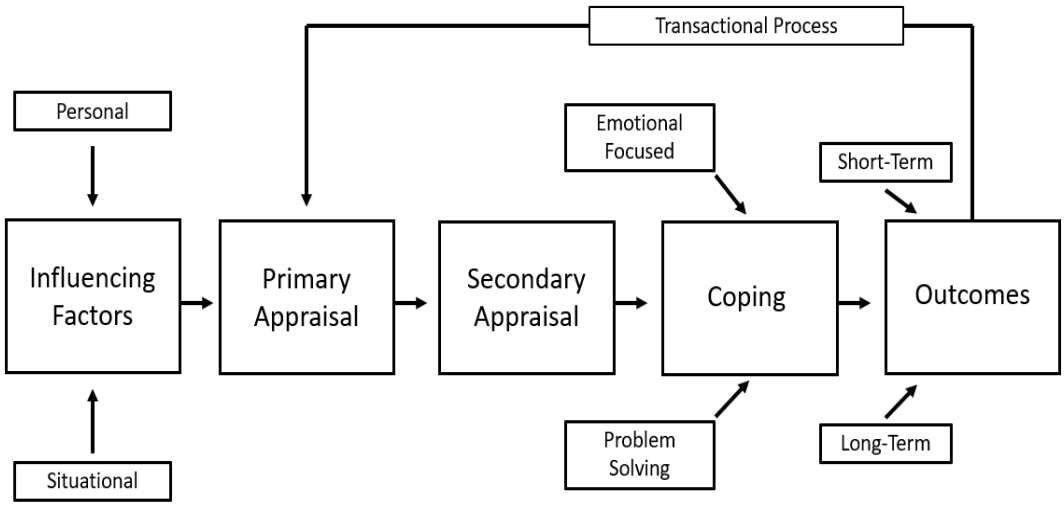
efficacy is defined as a person's belief about their abilities to exercise control over events that affect their lives (Bandura, 1989). Research shows that "those who believe that they can deal effectively with potential stressors, face and handle stress better, adopting more efficacious coping styles" (D'Amico et al., 2013, p.1).

TSCT Propositions

TSCT proposes that a person is constantly interacting with their environment, evaluating challenges, and evaluating their ability to manage these challenges (Lazarus & Folkman, 1984). How adversely an individual is impacted by these challenges depends greatly on a host of subjective experiences including: how the threat is perceived, how coping skills are engaged and perceived and what other risk factors are involved within the individual or their environment (Baumeister & Vohs, 2007). Outside stressors can be both personal or situational and impact influencing factors. The individual then engages in primary appraisal, evaluating the significance and magnitude of the threat and then in secondary appraisal, reviewing and evaluating available resources and coping strategies(Baumeister & Vohs, 2007). After the appraisal has occurred, an individual will engage in both emotion-focused and problem-solving coping strategies, which will lead to various short- and long-term outcomes (Baumeister & Vohs, 2007). It should be noted that these coping strategies and related outcomes may be both positive and negative. Also, this process is transactional in that the coping strategies employed and their related outcomes both shape future stress appraisals, which creates a cyclical pattern challenge (Lazarus & Folkman, 1984). Figure 3.1 illustrates to the central tenants of the TCST conceptual model.

Figure 3.1

Transactional Stress and Coping Conceptual Model (Schuster, Hammitt, & Moore, 2003)



Empirical Support of TSCT

Stress can impact health in two direct ways: the psychophysiological pathway and the cognitive-behavioral pathway. In the psychophysiological pathway, stress influence biological systems and immune functioning (Bell & Lee, 2002). The chronic release of stress hormones may directly impact many bodily functions. The hypothalamus-pituitary-adrenal axis (HPA axis) releases a hormone called cortisol and the prolonged release of cortisol can lead to the altered regulation of the immune system, the brain, and metabolism, all of which contribute to cardiovascular disease risk (Egerter, et al., 2011, p.3). Also impacted by chronic stress is the sympathetic nervous system. The sympathetic nervous system is responsible for releasing two hormones, adrenaline and noradrenaline. These hormones cause the body to increase heart rate and blood pressure, mobilize energy stores from the liver, and direct blood flow away from the skin, digestive tract and

kidneys to the heart, brain and skeletal muscles (Egerter, et al., 2011, p.3). The biological response to stress does serve as a protective mechanism, however, chronic stress related increases in adrenaline and noradrenaline have detrimental impacts on the physical and mental wellness of an individual. In the cognitive-behavioral pathway, stress can alter an individual's behaviors, routines and habits. In this way, stress negatively impacts an individual's health by influencing health behaviors. Stress has been linked to a series of unhealthy behaviors including tobacco use and substance abuse, binge eating, decreased exercise and decreased sleep quantity and quality. (Bell & Lee, 2002, McKee, et al.,2002, Yu & Chavez, 2017, Yu & Rosack, 2017). Through both the psychophysiological and the cognitive-behavioral pathway, stress can negatively impact several behavioral health youth outcomes.

Social and Emotional Learning Framework

Social and Emotional Learning (SEL) is a common practice framework for implementing universal prevention strategies, as outlined by the publication, "Promoting Social and Emotional Learning: Guidelines for Educators" (Elias et al., 1997). SEL draws from various fields including child and adolescent development, health promotion, principles of instruction, affective neuroscience, positive psychology, cognitive therapy, behavioral theory and application and prevention science (Gueldner & Feuerborn, 2016; Zins et al., 2004, Zins et.al., 2007). SEL-based interventions focus on a two-step process of first teaching youth how to process, integrate and apply social and emotional skills and also to provide youth with a safe and caring learning environment and teaching practices for the purpose of promoting the acquisition of clearly established SEL core competencies (Durlak, et al., 2011).

SEL Definition and Key Competencies

The SEL framework contains five core competencies: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making and each core competency has been established throughout the literature to have a direct relationship to youth behavioral health outcomes (CASEL, 2019).

SEL Propositions

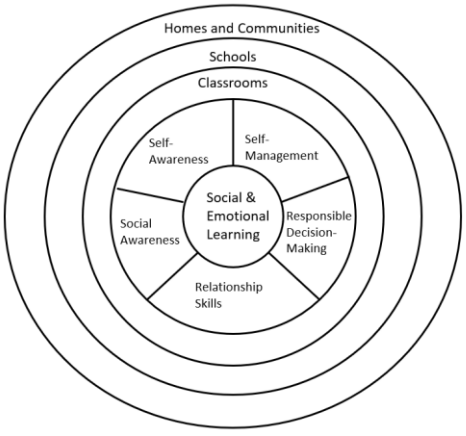
SEL asserts that as youth are taught the core competencies, given the opportunity to apply such competencies into real-world experiences, and provided a safe and nurturing learning environment with healthy collaborations between youth, peers, teachers and caregivers. Once this has been established, youth are better able to "generate and coordinate flexible, adaptive responses to demands and to generate and capitalize on opportunities in the environment" (Elias, et al.,1997). Further, these competencies are thought to provide a foundation for better overall adjustment of the youth, which are reflected in improved social behaviors, less conduct problems and emotional distress (Durlak, et al., 2011; Greenburg, et.al, 2003).

SEL is usually promoted within a system level approach. Firstly, the five core competencies of self-awareness, self-management, responsible decision-making, relationship skills and social awareness are taught to youth through psychoeducation and the implementation of these skills into everyday experiences. Promotion of SEL core competencies is of central importance, but the responsibility for success is not placed solely on the youth. Rather, responsibility is shared by creating successful learning environments. Zins et al., (2004) states that, "It is not sufficient to focus only on person-centered skill development. Consequently, effective SEL interventions are provided

within supportive environments, and are also directed at enhancing the social-emotional environmental factors that influence learning so that the climate is caring, safe, supportive and conducive to success" (p. 196). Figure 3.2 gives visual illustration to the core components within the SEL framework.

Figure 3.2

SEL Conceptual Framework (CASEL, 2019)



Empirical Support for SEL

Research supports the notion that youth who demonstrate an effective mastery of social-emotional competencies are more equipped to not only achieve academically but also experience a greater, overall sense of wellbeing and that failure to master these competencies can lead to a myriad of challenges and difficulties within a student's lifespan. (Durlak, et al., 2011). Further, a meta-analysis, reviewing over 20 years of SEL programming, demonstrates improvement in the SEL core competencies and corresponding outcomes including an increase in social and emotional skills, attitudes towards self and others, positive social behaviors, academic performance and a decrease

in conduct problems, emotional distress (Durlak, et al., 2011). In terms of favorability, it is reported the SEL interventions are generally well-received. In terms of feasibility, SEL is often implemented with ease into existing programming and can be implemented effectively by staff without extensive training (Durlak, et al., 2011).

Mindfulness Theory

Mindfulness theory, ancient in its roots, has experienced rapid growth in the social and behavioral sciences over the past three decades. There are multiple theoretical orientations towards mindfulness. Kabat-Zinn and associates' (1991, 1994) theoretical orientation to mindfulness has been selected within the proposed study due to its therapeutic orientation to stress reduction and its extensive evidence base. Kabat-Zinn's approach to mindfulness is based upon Buddhist philosophy, but was been secularized to fit into Western medical culture in 1979 when the University of Massachusetts Medical School opened the Stress Reduction Clinic (Wilson, 2014).

MBI's have evolved past their eastern philosophical and religious roots to become a mainstream treatment method for a wide host of symptoms. Kabat-Zinn's work has led to the widely popular Mindfulness-Based Stress Reduction (MBSR), a group-based intervention clinically established for the treatment of physical, psychosomatic, and psychiatric disorders (Grossman, et al., 2004). In addition to MBSR, the central constructs of mindfulness have been embedded into other evidence-based therapeutic practices including but not limited to Mindfulness Based Cognitive Behavior Therapy (MBCT; Segal, et al., 2002) and Dialectical Behavior Therapy (DBT; Linehan, 1993). MBI's have experiences a global expansion of interest and are used in a variety of settings including prisons, workplaces, hospitals, and schools (Hyland, 2016).

Mindfulness Theory Concepts and Definitions

The practice of mindfulness within western culture has been defined as "present-moment awareness, with an attitude of nonjudgement and curiosity" (Kabat-Zinn & Hanh, 2009). Inherent within this definition are the two major constructs of mindfulness theory. First, mindfulness involves the *intentional self-regulation of attention to the present moment* (i.e. ***present moment awareness***). Secondly, mindfulness involves *an orientation of curiosity, openness and acceptance* (or ***nonjudgment***; Bishop et al., 2004).

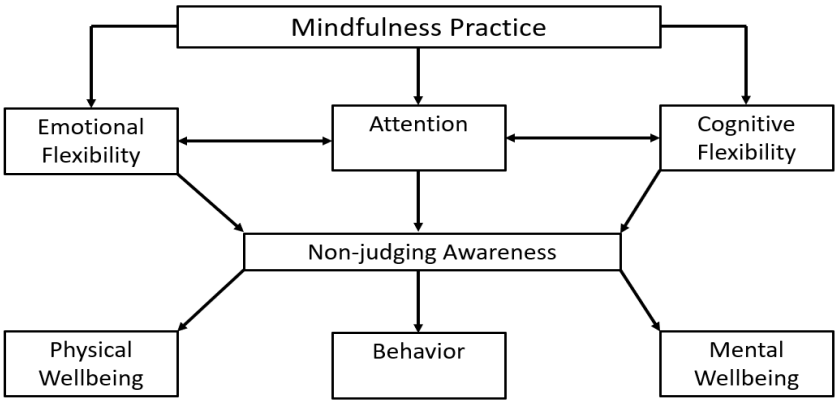
Mindfulness Theory Propositions

The Liverpool Mindfulness Model (2013) was selected for the current study because of the emphasis on attentional focus and nonjudgmental attitude as its central constructs. The first tier (motivational factors) is not central to the current study and therefore not depicted in the conceptual framework below. The second tier, mindfulness practice, can be classified as the training of one's mind through the core process of attention (tier 3) which includes both emotional and cognitive flexibility. Inherent to this process is the mental stance of non-judgment (tier 4) which leads to outcomes of physical wellbeing, improved behavior and mental wellbeing (tier 5). As stated by Malinowski (2013), "the training of attention skills is thought to underpin emotional and cognitive flexibility, bringing about the ability to maintain non-judging awareness of one's own thoughts, feelings and experiences" (p.2). This interaction is thought to be cyclical as well, as the outcomes of physical and mental wellbeing then once again, impact motivational factors towards future mindfulness practice.

In summary, the proposition of mindfulness theory states that as we cultivate a practice of intentional attention control to our present moment experience in a non-judgmental manner, we create space to inspect our thoughts more objectively, to experience our emotions with more tolerance and understanding and then to consciously choose behavior that is in harmony with our values. Thoughts and feelings are not something that need fixed, changed or overly identified with, but rather observed, experienced and understood (Iana, et al., 2018). We can then learn to act instead of re-act, breaking habitual patterns and thereby creating positive learning and health outcomes for ourselves. Further, this change in behavior and attitude has a positive and reciprocal impact on our environment and within our interpersonal relationships, creating symbiotic and accumulating benefits. Figure 3.3 illustrates the key constructs of mindfulness theory as proposed by the Liverpool Mindfulness Model (2013).

Figure 3.3

The Liverpool Mindfulness Model (Malinowski, 2013)



Empirical Support for Mindfulness Theory

Several current mindfulness measures include multiple constructs. Bergomi and Associates (2013) evaluated the central constructs present within all current validated mindfulness measures and reported nine central themes including: (a) observing or attending to experiences, (b) acting with awareness, (c) non-judgement or acceptance of experiences, (d) self-acceptance, (e) willingness and readiness to expose oneself to experiences or non-avoidance, (f) non-reactivity to experience, (g) non-identification with own experiences or decentering, (h) insightful understanding, and (i) labeling and describing (p.5). However, further research indicates high correlational cross loadings between the above constructs indicating redundancy within the constructs (Bergomi, et al., 2013). Further, research shows therapeutic counter-indication for promoting self-awareness without including the element of non-judgement or acceptance (Eisenlohr-Moul et al., 2012). For the sake of parsimony and therapeutic appropriateness, the two major constructs of mindfulness theory: present moment awareness and an attitude of nonjudgement and curiosity, as originally defined by Kabat-Zinn and associates (1994, 2009) and operationalized by Bishop et al. (2004) will be utilized in the current study.

There are demonstrated associations between the constructs of mindfulness practice and emotional regulation as well. Iana et al. (2019) studied the correlation of mindfulness mechanisms (reappraisal, acceptance, describing, observing, acting with awareness, nonreactivity and nonjudgment) with emotional regulation mechanisms (rumination, suppression of emotional expressions, avoidance, distraction, problem-solving, activities) and found several statistically significant results (R^2=0.14-0.17 with p<0.05 and R^2=0.18-0.58 with p<0.01). The mindfulness-to-meaning theory (Iana et al.,

2019; Garland et al., 2015 & 2017; Grecucci, 2015) states that mindfulness suspends initial automatic appraisals and stress reactivity and facilitates psychological distance from distressing thoughts and feelings, allowing for a shift of attention towards self-reflection and metacognitive awareness. Further, the very act of noticing and naming distressing emotions can help to provide emotional clarity and reduce the perceived need to act upon such thoughts and feelings (Gratz & Tull, 2010; Iana et al., 2017 & 2019). The positive association between mindfulness constructs and emotion regulation leads to a host of clearly documented outcomes associated with wellbeing. Hart & Ivtzan (2013) report wellbeing outcomes including: happiness, positive emotions, life-satisfaction, vitality, autonomy, optimism, self-regulation and cognitive performance.

The limitations of mindfulness theory primarily stem from the novel state of research within the field. Results from a recent meta-analysis found that many MBI's are underpowered and heterogeneous in both the participants and measured outcomes, which limits the generalizability of study results (Zenner, et al., 2014). More research is needed with adequately powered sample sizes, rigorous measures, and mixed-methodological data collection strategies (Zenner, et al., 2014). There are also measurement challenges within mindfulness theory, mostly centered on the reality that modern science has attempted to operationalize a historically spiritual, personal and phenomenological practice (Goodman, et al., 2017). Herein lies challenges amongst researchers to find distinct and mutually agreed-upon constructs. Due to these challenges, current MBI research often relies solely upon the measurement of indirect outcomes such as: stress resilience, emotional regulation, executive functioning, prosocial behavior, academic

success and cognitive performance (Goodman, et al., 2017). These outcomes, while indirectly related, are not theoretically justified.

The state of research for dynamic movement-based youth interventions is particularly novice although there is empirical justification for continued inquiry. In a systematic review, Khalsa & Butler (2016) identified 47 publications. In their review, they list several methodological limitations including a high degree in variability in dynamic movement intervention characteristics, limited sample sizes, and relatively weak research designs (Khalsa & Butler, 2016). In addition to the basic constructs of mindfulness practice, mindful movement can help youth cope with stress in numerous ways. Controlled breathing can improve emotional regulation, modulate the sympathetic nervous system, regulate heart rate variability and even invoke or discourage certain moods or emotional states (Spinazzola, et al.,2011, Telles, et al.,2010, Van der Kolk, et al.,2014). Rhythmic movements and mindful attention of bodily sensations are perhaps the most unique contribution that mindful movement can provide. Rhythmic movement can help to regulate bodily functions that may have become disrupted during states of high stress and activate the parasympathetic nervous system, which is responsible for resting and digesting (Spinazzola, et al.,2011). With mindful attention, one can move beyond a state of fear and avoidance and gradually learn to objectively observe the body's physiological response to fear from perceived threats. With nonjudgement, one can move to a state of acknowledging, rather than judging these sensations and then consciously use the breath to facilitate and choose a more appropriate response to the situation at hand (Spinazzola, et al.,2011; Van der Kolk, et al.,2014).

An Integrated Theory of Change for the *DMind Online Group Project*

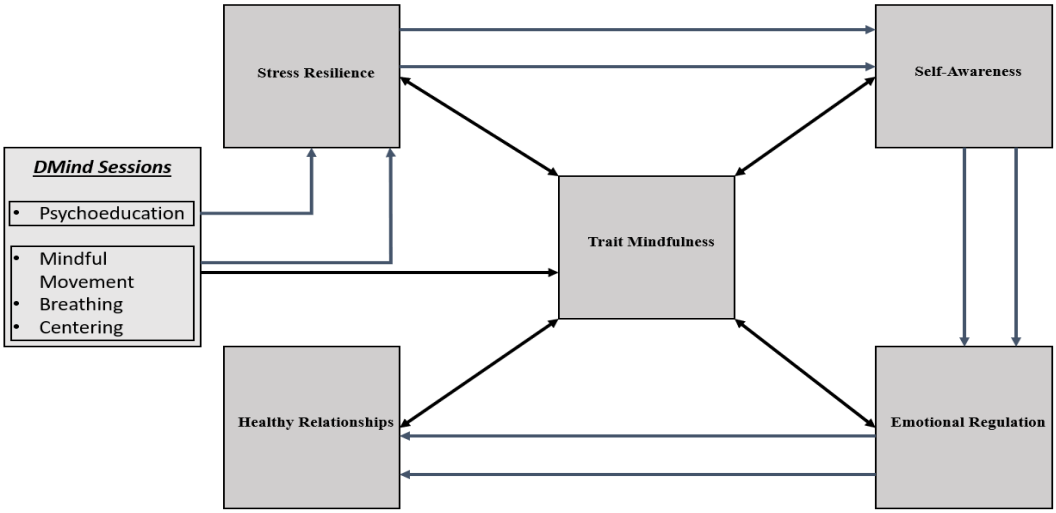
DMind is an evidence-based, trauma-informed program that strengthens stress resilience and social-emotional learning (Frank, et al., 2014; Frank, et al., 2017; Ramadoss & Bose, 2010). *DMind* enhances youth outcomes by incorporating methods of psychoeducation, action (mindful movement), breathing, and centering (mindfulness) into every session (Niroga Institute, n.d.). ***Stress resilience, self-awareness, emotion regulation*** and ***healthy relationships*** are the four main psychoeducational topics of the curriculum and are also the targeted outcomes for the study along with trait mindfulness, which is thought be influenced by the mindful movement, breathing and centering curricular components and correlated to the psychoeducational outcomes as well.

The key constructs of TCST will be represented as ***stress resilience***, the first core component to the DMind curriculum. Next, the second, third and fourth components of the *DMind* curriculum (***self-awareness, emotional regulation*** and ***healthy relationships***) embody the concepts found within SEL theory. The construct of ***self-awareness*** is taken straight from the previously depicted SEL framework whereas e***motional regulation*** includes the SEL competencies of *self-management* and *responsible decision-making* and ***healthy relationships*** includes the SEL competencies of *social awareness* and *relationship skills*. Finally, the key constructs of mindfulness theory will be represented within the central domain of the *DMind* curriculum, ***trait mindfulness.*** Trait mindfulness refers to "a stable, dispositional quality", whereas state mindfulness is the "capacity to cultivate a particular state of mind during a meditative practice" (Goodman, Madni, & Semple, 2017, p.2). State mindfulness is a transient and experience-specific phenomenon whereas trait mindfulness is a static feature embedded within the personality of an

individual. It is imperative that the distinction between state and mindfulness be addressed because not only are these two features mutually distinct, but they also are measured in different capacities. For the purpose of this study, trait mindfulness will be the focused outcome. Figure 3.4 gives depicts the *DMind Online Group Project* theoretical model of change.

Figure 3.4

DMind Online Group Project Theoretical Model of Change



Within the *DMind Online Group Project Theoretical Model of Change*, the key treatment components are described and show direction to indicate the order with which the psychoeducational components of the treatment are delivered. The core components are illustrated within the external perimeter of the model within four outer grey boxes. The order and direction of the delivery of these four curricular treatment components are theoretically justified in the treatment manual text (Bose, et al., 2016). It is assumed, that without the ability to effectively manage one's stress, a student will not be able to effectively build one's self-awareness, manage emotions or build healthy relationships.

Stress-resilience is seen as a standard of safety that must be achieved before a student can acquire any additional new skills. Non-judgmental awareness of self in context to our environmental (self-awareness) is viewed as the next component of the treatment manual. This level of compassionate awareness aids in our ability to regulate our emotions and to achieve habits of a healthy relationship with others. Emotion regulation can be achieved once the physiological stability of stress resilience and the non-judgmental approach to self-awareness have been achieved and is also seen as a prerequisite the healthy relationships. The order with which these treatment components are depicted has been directed by the literature within the treatment manual (Bose, et al., 2016) and will not be statistically tested within the present study. Therefore, the arrows depicting this relationship is shaded in grey. Next, the experiential components of the treatment are thought to have a direct impact on (mindful movement, centering and breathing) are thought to have a direct relationship on program participants' levels of trait mindfulness. This construct is indicated with the center grey box within the model. Finally, it is proposed that there is a relationship between the psychoeducational treatment components and the experiential treatment components, which is depicted by the two-way arrows placed in between the center and peripheral construct boxes. These arrows are black, indicating that statistical analysis will be utilized within the current study to test the presence of a possible relationship between constructs.

Conclusion

In conclusion, this chapter summarized the key findings to the parent theories of Transactional Stress and Coping Theory (along with the related constructs of trauma, resilience and self-efficacy), Social and Emotional Learning Framework and Mindfulness

Theory. In this integrated model, we see the interrelated quality of SEL and MBI core components. SEL provides psychoeducation within a safe learning environment, and the mindfulness practices of movement, breathing and centering enhance the psychoeducational treatment components and directly influence mindfulness levels of youth participants. In the next chapter, we will discuss the methodological approach of the *DMind Online Group Project*, along with the measures and statistical analyses selected to support the theoretical model of change.

Chapter 4

Method

In this chapter, we will discuss the method utilized to evaluate the *DMind Online Group Project.* The *DMind Online Group Project* methodology includes the study purpose, research aims and hypotheses, sample size and power, research design procedures and selected measures for the study.

Study Purpose, Research Aims and Hypotheses

The following section will outline the purpose, research aims and hypotheses for the *DMind Online Group Project.*

Purpose

The purpose of this study was to test the feasibility and short-term effectiveness of the *DMind Online Group Project* and to explore the correlated nature between the psychoeducational and experiential-related outcomes within treatment participants. This efficacy trial utilized a quasi-experimental, within-group/pretest-posttest research design with 44 participants.

Research Aims

The specific aims of the study are:

1. *To determine the overall DMind Online Group Project feasibility as measured by fidelity, facilitator skills, participant engagement, participant satisfaction and measurement internal reliability.*
2. *To examine the short-term pretest to posttest improvements in in social and emotional and mindfulness outcomes for program participants.*
3. *To explore the correlated nature between the psychoeducational and experiential-related outcomes for program participants.*

Hypotheses

Research Aim One- it is hypothesized that the online adaptation to the *DMind Online Group Project* will be feasible as reflected by favorable ratings in program implementation fidelity, facilitator clinical skills, participant engagement, participant satisfaction and measurement internal reliability (as compared to benchmark reporting within the literature for similar studies). Additionally, it is hopeful and expected that all participants will report near equivalent satisfaction ratings regardless of race, gender, identity or age.

Research Aim Two- it is hypothesized that the *DMind Online Group Project* participants will show pre to posttest improvements in social and emotional and mindfulness outcomes. Specifically, it is hypothesized that findings will demonstrate a decrease in youth self-reported trauma symptoms, perceived stress, and emotional symptoms (anxiety and depression) and will demonstrate a pretest to posttest increase in self-reported mindfulness, personal and relational resilience, coping self-efficacy, self-compassion and social and emotional features (peer relationship and prosocial behavior).

Research Aim Three- it is hypothesized that there is a correlational nature between the psychoeducational focus of the social and emotional outcomes and the experiential focus of the mindfulness outcomes for study participants. Specifically, it is hypothesized that mindfulness is positively correlated with self and relational resilience, coping self-efficacy, self-compassion, and prosocial behavior and that youth-reported mindfulness is negatively correlated with trauma symptoms, perceived stress, peer problems, anxiety, depression, and other generalized emotional symptoms.

Sample Size and Power

Following Cohen's recommendation to determine a medium effect size with significance level set at .05 ($\alpha<.05$), a minimum of 64 participants would need to be included in the current study for an adequately powered sample size (Cohen, 1992). Due to uncontrolled circumstances surrounding the pandemic-related disruption to education and research activities, an adequately powered sample size was not obtained in the current study. The *DMind Online Group Project* started with 44 participants. There were 40 participants who provided usable data that was utilized for Research Aim Three. The *DMind Online Group Project* ended with 30 participants, whose data was utilized for Research Aims One and Two.

Research Design

The *DMind Online Group Project* utilized a quasi-experimental, quantitative, longitudinal, within-group/ pretest-posttest research design. All participants were asked to complete the pretest before the start date of the group sessions and were asked to complete the posttest after the last session (via online Qualtrics survey).

The non-randomized design of the current study fails to counteract the typical threats to internal and external validity in social science research design including selection bias, maturation threats, history threats, and selection and reactive effects (Davis, 2004). Therefore, results from the current study are limited in their ability to make causal connections between the intervention and pretest to posttest differences of the project participants (Davis, 2004). However, the current study seeks to offer a unique and valuable contribution to the research by providing a rigorous focus on fidelity, facilitator training, facilitator clinician skills and participant engagement which is rarely

reported in the literature (Durlak & Dupree, 2008). By doing so, the current study instills a building block for future, adequately powered, replication studies with randomized control groups and increases the reliability of the current project (Davis, 2004). Table 4.1 depicts the research design for study participants.

Table 4.1

DMind Online Group Project Study Design

Project Details	Project Description
Research Design	Quasi-experimental
Group Assignment	Intervention Group Only
Project Schedule	Pretest-Intervention-Posttest
Study Approach	Within-Subject Longitudinal
Data Collection Approach	Online Via Qualtrics Survey

Research Procedures

The content below will describe recruitment and sampling, consent and assent, data collection, and intervention procedures. All study procedures were approved by the University of Missouri Institutional Review Board (MU IRB).

Recruitment and Sampling Procedures

Following MU IRB approval (see Appendix A), recruitment occurred utilizing a combination of convenience and snowball sampling methods. Recruitment also included advertisements including social media posting, email announcements to school counselors and a university-wide email recruitment announcement. All youth between the ages of 11-17, regardless of SES, race, free and reduced lunch status and any possible behavioral diagnosis or intellectual disability were eligible to participate as long as they had an electronic device and reliable internet connection so that they could follow along with the online intervention from home. Interested youth and their families were sent an

electronic informational email (see Appendix D) with details of the project and a Qualtrics link to complete the *DMind Online Group Project* consent form (see Appendix B).

Within the context of universal application of the current study to youth impacted by disaster, it is assumed that all youth recruited for the current study had been impacted by one or multiple disasters during the year of 2020. The year began with the lockdown associated with the widespread of the Covid-19 virus, included a record-breaking 22 natural disasters (NOAA.gov, 2021) and ended with an attempted insurrection of the nation's capital after a politically tense presidential debate (USA Today, 2021). Further, escalating police brutality disproportionately targeting black Americans has led to civil unrest (The Washington Post, 2021). In terms of disaster prevalence and severity, 2020 has been one of the most significant years to date (NOAA.gov, 2021) and it assumed that the far-reaching impact of these various events has impacted our study sample on various levels.

Consent and Assent Procedures

Interested youth and their families were sent a Qualtrics link to complete the *DMind Online Group Project* consent form (see Appendix B). The online consent form informed youth and their legal guardians of the project details, participation stipend amount ($20 for pretest completion, $20 for posttest completion and a participation stipend of $2.50 per session for up to $40, with a total possible compensation of $80) the youth's rights as a study participant and contact information for Principal Investigator of the study and the MU IRB office. The parent or legal guardian was asked to verify that they had the legal authority to make decisions for the appropriate youth participant and

sign their name and the youth were asked to provide their name, date of birth and their signature as well. Participants were also asked to provide contact information for an emergency contact and their stated availability for meeting times on the electronic consent form.

Study subjects were incentivized in the form of electronic Walmart gift cards for participation. Each participant had the opportunity to earn up to $80 dollars. They were paid $20 for pretest completion, $20 for posttest completion and $2.50 for each the 16 possible sessions that they attended.

Data Collection Procedures

Student self-reported data and observational data were collected for the *DMind Online Group Project*.

All consented participants were asked to complete self-reported, individual-level data for pretest and posttest data collection in the form of online survey. Pretests were offered to youth after consent and prior to the initiation of the *DMind Online Group Project* sessions and posttests were offered to participants after the last *DMind Online Group Project* session has occurred (and up to 2 weeks after). The posttest included the same measures as the pretest and with the addition of a *DMind Online Group Project* Satisfaction Survey as well (see Appendix E).

In addition to student-level data, observational reports (see Appendices F & G) were completed by trained observers for every session throughout the entire study and double observation occurred intermittently throughout the group project as well.

Intervention Procedures

Within the intervention procedures section, the *DMind* curriculum, procedures for preparation, facilitation and implementation of the intervention and the overall timeline for project completion are discussed.

The *DMind* Curriculum. *DMind* is an evidence-based, trauma-informed program that strengthens stress resilience and social-emotional learning (Frank, et al., 2014; Frank, et al., 2017; Ramadoss & Bose, 2010). *DMind* enhances SEL learning by incorporating the experiential methods of action (movement), breathing, and centering (mental focus) into every session (Niroga Institute, n.d.). The *DMind* curriculum is divided into four different themes: *stress-resilience, self-awareness, emotional regulation* and *healthy relationships*.

The 48-session, 15-minute "Teaching Transformative Life Skills" (Bose, et. al. 2017) curriculum was combined into 16- 45-minute sessions. This researcher, after completing the necessary online training, converted the "Teaching Transformative Life Skills" (Bose, et. Al. 2017) manual handbook into a PowerPoint presentation format, so that the curriculum could be delivered in an online format (via live zoom sessions with screen share) to all project participants. The two trained practicum students were responsible for delivering the entire curriculum, with the exception of the "Mindful Movement" portion of the group sessions. The "Mindful Movement" activities were delivered as a pre-recorded video for each session, with the project Principal Investigator (who is a certified youth yoga instructor) as the lead facilitator and the two trained research assistants as participants.

DMind Curriculum Preparation and Facilitation. Two advanced-standing, master's-level clinical social work practicum students were recruited, hired, and trained as research assistants for the *DMind Online Group Project*. Both research assistants, as well as the project Principal Investigator, completed the *DMind* 6-hour, on-demand online training. Additionally, each trained project staff received a copy of the *DMind* facilitator manual, "Teaching Transformative Life Skills to Students: A Comprehensive DMind Curriculum*"* (Bose, et al., 2016). Both research assistants were also trained on the objective and quantifiable completion of observational forms prior to group project initiation. During the intervention, the *DMind Online Group Project* staff participated in a preparatory mock session each day the intervention was held.

DMind Curriculum Implementation. Consented participants were divided into four different groups, according to their stated availability for group times. All four groups were held consecutively and daily, from March 1-March 25 on Monday through Thursday, in the afternoon or evening, for four weeks until the 16 sessions were completed. For the four daily group sessions, each research assistant was the group facilitator for two sessions and alternatively, was the group assistant for the other two sessions. Group assistants were responsible for taking attendance, assisting the group facilitator with media or technology difficulties, communicating with group participants by chat if needed and being available to moderate and provide behavioral support as needed. The group assistant was also responsible for completing observational data and the group facilitator was responsible for completed a protocol checklist (see Appendix G) at each session.

Project Schedule and Curriculum Timeline. Research assistant recruitment, selection and training, participant recruitment and consent, data collection and project implementation occurred between October 2020-April 2021. Table 4.2 depicts further details for the *DMind Online Group Project* schedule and curriculum timeline.

Table 4.2

Project Schedule and Curriculum Timeline

Time Frame	Activity
Fall 2020	Research Assistant Recruitment & Selection
Jan 2021	Researcher Staff Online Training
Jan 2021	*DMind* Curriculum Online Adaptation
Feb 2021	*DMind Online Group Project* Participant Recruitment, Pretest and Consent Collection
March 2021	*DMind Online Group Project* Implementation
March- April 2021	Administer and Collect Posttests, Distribute Posttest and Participation Stipends, Data Analysis

Measures

The following section describes the instrumentation that was utilized to answer Research Aims One, Two and Three. Table 4.3 illustrates the method, reporter types and schedule for each of the indicated measures utilized in the *DMind Online Group Project.*

Table 4.3

DMind Online Group Project Measurements

Research Aim and Measure	Method	Reporter	Schedule
Social and Emotional Outcomes:			
UCLA-Posttraumatic Stress Scale (UCLA- PTSD)	SR	Youth	Pretest/Posttest
Perceived Stress Scale (PSS)	SR	Youth	Pretest/Posttest
Children and Youth Resilience Measure (CYRM)- personal and relational resilience subscales	SR	Youth	Pretest/Posttest
Coping Self-Efficacy Scale (CSE)	SR	Youth	Pretest/Posttest
Self-Compassion Scale Short Form (SCS-C)	SR	Youth	Pretest/Posttest
Strengths and Difficulties Questionnaire (SDQ)- emotional symptoms, peer-problems and prosocial skills subscales	SR	Youth	Pretest/Posttest
Personal Health Questionnaire 8- Adolescent (PHQ 8-A)	SR	Youth	Pretest/Posttest
Generalized Anxiety Disorder Scale (GAD 7)	SR	Youth	Pretest/Posttest
Mindfulness Outcome:			
Modified Mindful Attention Awareness Scale for Children (MAAS-C)	SR	Youth	Pretest/Posttest
Feasibility Outcomes:			
Direct Behavior Rating (DBR)	O	RA	Each Session
Researcher-Devised Fidelity Checklist	O	RA	Each Session
Researcher-Devised Attendance Checklist	O	RA	Each Session
Researcher-Created Satisfaction Survey	SR	Youth	Posttest Only
Inter Observer Agreement:			
Researcher-Created Fidelity Checklist	O	Researcher	>50% of Sessions

Note. *SR=Self-Report, O=Observation, RA=Research Assistant

Program Feasibility

As outlined in Research Aim One, overall feasibility of the *DMind Online Group Project* was determined by measuring fidelity, group facilitator clinical skills, participant engagement, participant satisfaction and measurement internal reliability.

Program Fidelity. To observe and record project fidelity, the researcher devised *DMind Online Group Project* Fidelity Checklist was utilized via observational report by the group assistant at each group session (see Appendix F). Additionally, sessions were observed by a second researcher, intermittently, to provide additional data so that an inter-observer agreement (IOA) for this data could be calculated. The *DMind Online Group Project* Fidelity Checklist includes 12 yes/no questions regarding the group

facilitator's adherence to basic curricular components of the manualized treatment intervention.

Facilitator Clinical Skills. Facilitator clinical skills were also measured by observational report of the group assistant and intermittently from this researcher as a double reporter. The above-mentioned, *DMind Online Group Project* Fidelity Checklist also included five, Likert-scaled questions (on a scale of 1-5). Two of these questions, asked about group facilitator's warmth and knowledge of session materials, specifically pertain to this feasibility domain. Additionally, an observational report of the Direct Behavior Rating Scale (DBR) (5 items, 10-point scale, Christ, Riley-Tillman, & Chafouleas, 2009), questions number 2 (facilitator praise), 3 (facilitator communication), 5 (facilitator enthusiasm) and 6 (facilitator/participant rapport) were collected at each session and utilized in the quantification of facilitator clinical skills. No articles citing the internal reliability of the DBR were located.

Participant Engagement. Participant engagement was observed and measured using the following features: attrition rate, attendance rate, number of participants with their screens on during sessions through the above-mentioned *DMind Online Group Project* Fidelity Checklist. Additionally, this same checklist included three, Likert-scaled questions (1-5) asking about participation engagement, enthusiasm and behavior. Finally, question number four (quantification of 90% participant engagement on a scale of 0-10) from the Direct Behavior Rating Scale (DBR) (5 items, 10-point scale, Christ, Riley-Tillman, & Chafouleas, 2009). All of these measures were collected via observational report by the group participant and intermittently from a second observer so that IOA could be calculated.

Participant Satisfaction. Participant satisfaction was measured via the researcher devised *DMind Online Group Project* Satisfaction Survey (see Appendix E), that was included along with participant demographic data on the posttest. The *DMind Online Group Project* Satisfaction Survey included 13 Likert-scaled, close-ended questions (from 1-5) and 6 open ended questions about participants' overall views on content learned, perceived utility, enjoyability, ease of use, value, and safety in regard to race, ethnicity, sexual identity and gender orientation.

Measurement Internal Reliability. Measurement reliability refers to Research Aim One. However, this analysis was completed utilizing the measures indicated below for Research Aims Two and Three.

Social and Emotional and Mindfulness Outcomes

Various social and emotional outcomes and one mindfulness outcome were utilized to examine the data for Research Aims Two and Three. All measures selected to measure social and emotional outcomes have been validated for use with the age groups of program participants.

Social and Emotional Outcomes. Various social and emotional outcomes for the *DMind Online Group Project* were utilized including measures for: PTSD, perceived stress, personal and relational resilience, coping self-efficacy, self-compassion, peer problems, prosocial behaviors, emotional symptoms, anxiety, and depression.

To observe and report youth trauma symptoms outcomes for *DMind Online Group Project* participants, the UCLA Brief Covid-PTSD scale (UCLA, 2021) PTSD subscale (11 items, 5-point scale, α=.93, Rolon-Arroyo, et al., 2020) was used.

To observe and report perceived stress outcomes for *DMind Online Group Project* participants the Perceived Stress Scale (PSS) (Cohen, et al., 994) (10 items, 5-point scale, α=.82, Andreou, et al., 2011) was used.

To observe and report youth personal and relational resilience outcomes for *DMind Online Group Project* participants, the Child and Youth Resilience Measure (CYRM-12), (12 items, 5-point scale, α=.75-.85, Liebenberg, et al., 2013) was used.

To observe and report youth coping self-efficacy outcomes for *DMind Online Group Project* participants, the Coping Self-Efficacy (26 items, 11-point scale, 3 subscales, α=.80-.91, Chesney, et al., 2006) was used.

To observe and report youth self-compassion outcomes for *DMind Online Group Project* participants, the Self-Compassion Scale Short Form (SCS-C) (Sutton, et al., 2017) (12 items, 5-point scale, α=.81-.83).

To observe and report social and emotional and healthy relationships outcomes for *DMind Online Group Project* participants, the Strengths and Difficulties Questionnaire (SDQ) (25 items, 5 subscales, 3-point scale, α=.73, Goodman, 2001), subscales: peer problems and prosocial behavior were used.

To observe and report emotional symptom outcomes for *DMind Online Group Project* participants, the Strengths and Difficulties Questionnaire (SDQ) (25 items, 5 subscales, 3-point scale, α=.73, Goodman, 2001), subscales: emotional symptoms, the Generalized Anxiety Disorder Scale (GAD-7) (7 items, 10-point scale, α= .92, Spitzer, et al., 2006), and the Personal Health Questionnaire (PHQ-8 A) (Johnson, et al., 2002), (8 items,10-point scale, α=.89, Shin, et al., 2019) were used.

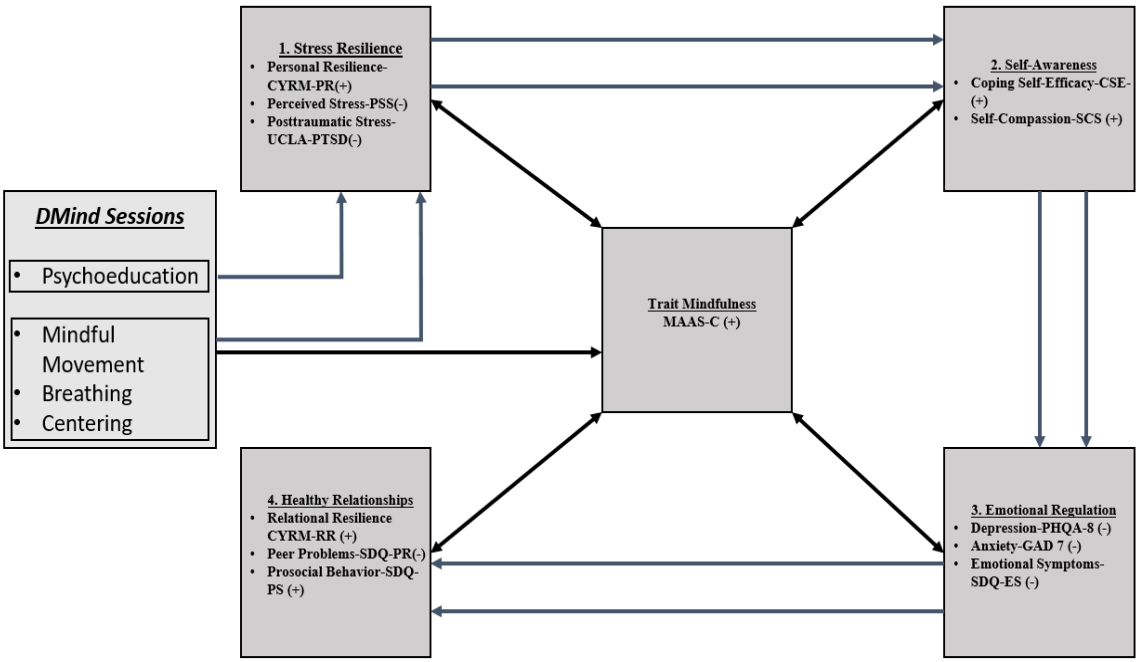
Additionally, for each of these indicated measures, a Cronbach alpha test was run to determine internal reliability for the current study and use benchmark reporting to compare the reliability found in the *DMind Online Group Project* with previously established reliability for each of the validated instruments. See analysis for further information.

Mindfulness Outcome. To observe and report youth self-reported mindfulness outcomes for *DMind Online Group Project* participants, the Modified Mindful Attention Awareness Scale for Children (MAAS-C) (Benn, 2004), (15 items, 6-point scale, α=.84, Lawlor, et al., 2014) was used. Please note that the MAAS-C is normally negatively worded, indicating that a lower score is favorable to a higher score. Therefore, for the purpose of the theoretical and contextual relationship for Research Aim Three only, the MAAS-C score has been negatively coded, indicating that a higher score implies a higher level of mindfulness. The selected mindfulness measure has been validated for use with the age groups of program participants.

Illustration of the hypothesized proximal outcomes of the *DMind Online Group Project*, as well as the theoretical constructs measured within each domain are depicted in the Integrated Theory of Change in Figure 4.1.

Figure 4.1

DMind Online Group Project Theoretical Model of Change with Associated Measures



Analysis Strategy

The analysis strategies for Research Aims One, Two and Three are listed below.

For Research Aim 1:

To determine the overall DMind Online Group Project feasibility as measured by fidelity, facilitator skills, participant engagement, participant satisfaction and measurement internal reliability, the following analysis procedures were utilized.

Average scores were calculated and reported in narrative and table format. Inter-Observer Agreement was calculated, and kappa scores reported for all of the double observations that occurred for each targeted outcome. Average scores were calculated for an overall participant satisfaction score, and also determined individually, so that

results could be aggregated, and then average participant satisfaction ratings could be compared according to race, sex and age. Observational reports, kappa scores, group participants' average satisfaction ratings and a between group t-test comparison between average responses, according to demographic category, were all run in Microsoft Excel. Kappa scores utilized the following guidance (k< .40= poor, .4≤k≤.75= fair to good, k>.75= excellent, (APA, 2020). Additionally, Cronbach alpha scores were run for each measure utilized in the study and benchmark reporting is provided for each scale. The comparisons between the Cronbach alpha scores for the current study and for previously cited studies are compared in narrative and table format. Cronbach alpha scores were calculated in *RStudio* (RStudio, 20202) using the "alpha" command within the *psych* package (Revelle, 2020) and ratings of alpha scores for reported measures were analyzed utilizing the following guidelines: *$\alpha \geq 0.9$ = excellent, $0.7 \leq \alpha > 0.9$ = good, $0.6 \leq \alpha \geq 0.7$= acceptable, $0.5 \leq \alpha \geq 0.6$=poor, $\alpha < 0.5$ unacceptable (Streiner, 2003).

For Research Aim 2:

To examine the short-term pretest to posttest improvements in social and emotional and mindfulness outcomes for program participants, the following analysis strategies were utilized.

Paired-sample t-tests were run for each of the targeted measures, demonstrating the aggregated mean score, pretest to posttest differences, for each measure, between each group participant that completed both the pretest and posttest and participated in the intervention group. Then, *t* scores, *p* scores and Cohen's *d* scores were calculated and depicted in both narrative and table format. Finally, a graph showing pretest to posttest differences in mean scores, with diagnostic cutoff scores, were created for PTSD,

Anxiety and Depression measures and a graph showing pretest to posttest differences in mean scores was created for the *Perceived Stress* measure. All t-tests were run in *RStudio* (RStudio, 2020), utilizing the "t.test" command within the *psych* package (Revelle, 2020) with *p* value set at .05 (Streiner, 2003). Effect sizes were run in *RStudio* (RStudio, 2020) with the *cohen.d* command from the *effsize* package (Torchiano,2020). For this analysis, effect sizes were determined using the following guidance: $d<.02$= negligible effect, $.02 \leq d < .05$= small effect, $.05 \leq d < .08$= medium effect and $d>.08$=large effect (McLeod, 2019). Mean and standard deviations were run from the base library packages installed in *RStudio* (RStudio, 2020) and the normality tests were run using the "shapiro.test" command within the *psych* package (Revelle, 2020).

For Research Aim 3:

To explore the correlated nature between the psychoeducational and experiential-related outcomes for program participants the following analysis strategies were utilized.

A correlation table was run to observe hypothesized relationships between targeted variables. Means, standard deviations, Pearson correlations, and coefficients of the determination are all depicted in narrative and table format. Tests for normality violations were conducted and results were reported. Finally, scatterplots were created to give visual representation to the directionality of correlations (see Appendix H). Correlation tables were created using "stat.desc" command within the *pastecs* package (Grosjean & Ibanez, 2018) and scatterplots were created using the "ggplot" command within the *ggplot2* package (Wickham, 2016) within *RStudio* (RStudio, 2020). Again, significance values for the correlation tables were set at $p<.05$ (Streiner, 2003).

Chapter 5

Results

Chapter five will begin by summarizing the participant demographics for the current study and will then describe analytic findings organized by research aim. Findings will be depicted in both narrative and table format in the order presented in Chapter Four of this manuscript.

Participant Demographics

Demographic data was collected for the 30 participants who participated in the intervention and also completed both the pretest and the posttest for the *DMind Online Group Project.* In terms of gender, 57% (17/30) were male, 37% (11/30) were female and 0.07% (2/30) indicated "other" for their gender identity. In terms of age, participants were dichotomously broken into categories of middle school age (11-13 years old) or high school age (14-17 years old). 57% (17/30) of participants were middle school aged and 43% (13/30) were high school aged. The mean age of participants was 13.63. In terms of race, one student was black, two were Hispanic, two were biracial, one was Asian and 24 were white, indicating that 20% (6/30) of the participants were youth of color and 80% (24/30) were white youth. A visual representation of the *DMind Online Group Project* is provided in table 5.1.

Table 5.1

Demographic Characteristics of the DMind Online Group Project

Demographic Group	Number of Participants (*n*)	Percentage of Total Participants%
Gender		
Female	11	37%
Male	17	57%
Other	2	.07%
Age		
11-13 years old	17	57%
14-17 years old	13	43%
Race		
Youth of Color	6	20%
White Youth	24	80%

Research Aim One

The purpose of Research Aim One was *to determine the overall DMind Online Group Project feasibility as measured by fidelity, facilitator skills, participant engagement, participant satisfaction and measurement internal reliability as compared to similar feasibility studies.*

DMind Online Group Project Fidelity

Analysis of observational reports indicate high fidelity to the *DMind Online Group Project* treatment manual. Fidelity was promoted throughout the project by providing facilitator training, consistently ensuring that the group facilitators had access to the program materials, running a mock session prior to each scheduled group session and asking the group facilitator to complete a protocol checklist (see Appendix F) after each group session. Due to the rigor applied to program implementation, Fidelity Checklist questions 1-12 (see Appendix F) completed by the group assistant at each group session demonstrate that the project curriculum was implemented with a 100%

fidelity rating. A second researcher observed 47% of the total sessions (30 out of 64 sessions) and also indicated a 100% fidelity rating. Interobserver agreement (IOA) for the double observations on this rating scale indicated perfect score (APA, 2020) (*k*=1.00).

DMind Online Group Project Facilitator Clinical Skills

For each session, group assistants ranked group leaders on praise, communication, enthusiasm, and rapport on a scale of 0-10 according to the DBR scale (Christ, et al.,2009) and on warmth and knowledge on a scale of 1-5, from the *DMind Online Group Project* Fidelity Checklist (see Appendix F). Analysis of observational reports indicate a combined rating of 96% for the DBR ratings with IOA (*k)*=.89 and 97% for the Fidelity Checklist questions with IOA (*k*)=.98.

DMind Online Group Project Engagement

DMind Online Group Project Engagement was evaluated by observing and analyzing group attrition and group attendance, average number of participants with cameras on during zoom sessions, and group assistants' observational reports on engagement, enthusiasm, and behavior ranked on a scale of 1-5 *DMind Online Group Project* Fidelity Checklist (see Appendix F).

Attrition and Attendance. Within the current study, 44 students were initially enrolled. However, 11 attrited before the initial group session began. There were 40 participants who provided usable data for the pretest, but another 10 either dropped out of the study or did not provide posttest data. A total of 30 subjects participated in the intervention and completed both the pretest and the posttest.

Within the initial treatment group (n=44), five participants (11%) attended zero sessions, five participants (11%) attended one to four sessions, six participants (14%)

attended five to eight sessions, eight participants (18%) attended 9-12 sessions and 20 participants (45%) attended 13-16 sessions. Total attrition rates for the current study are defined as participants attending ≤4 sessions and is reported at 27%.

Attendance was taken daily by the group assistance and daily attendance was measured according to group assignment. Group One started with 10 participants. With a total of 160 possible attendances (10 participants x 16 sessions), there were 128 total attendances for this group assignment, with a total attendance rate of 80%. Group Two started with nine participants. With a total of 144 attendances (9 participants x 16 sessions), there were 105 attendances for this group assignment with a total attendance rate of 73% (105/144). Group Three started with seven participants. With a total of 112 attendances (7 participants x 16 sessions), there were 69 attendances for this group assignment, with a total attendance rate of 62%. Group Four started with 10 participants. With a total of 160 possible attendances (10 participants x 16 sessions), there were 130 attendances for the group assignment with a total attendance rate of 82%. The total overall attendance rate for the combined four group assignments within the current study was 74%. Of the total participants who attended at least 5 sessions, there was an average attendance rate of 78%.

Number of Participants with Cameras on During Zoom Sessions. For Group Leader One (combining Group Assignments One and Two), 77% of participants had their cameras on during the total number of group sessions and Group Leader Two (combining Group Assignments Three and Four) 76% of participants had their cameras on during the total number of group sessions, indicating that there was not a significant difference

(p>.05) between group leaders regarding group participants decision to turn their cameras on during group sessions and giving a total screen-on percentage of 76.5%.

Participant Engagement by Observational Report. For each group session, group assistants were asked by rate the group participants' engagement level (≥90%) by observational report on a scale of 0-10 according to the DBR scale (Christ, et al.,2009) Additionally, group assistants ranked group participants on engagement, enthusiasm and behavior, on a scale of 1-5, from the *DMind Online Group Project* Fidelity Checklist. Analysis of observational reports demonstrate an overall average of 90% for the DBR question on group engagement with an IOA (*k)*=.73 and a combined overall average score of 90% on questions (scaled 1-5) on engagement, enthusiasm, and behavior with an IOA (*k*)= .98. Table 5.2 gives visual representation to the feasibility of the *DMind Online Group Project* within the context of program fidelity, group facilitator clinical skills and participant engagement.

Table 5.2

DMind Online Group Project Fidelity, Clinical Skills and Participant Engagement

Feasibility Domain	Measurement	Average	Measurement IOA (*k*)	Total Double Observation (%)	IOA Rating (*k)*
Fidelity					
	Fidelity Checklist Q's 1-12	100%	1.00		
Clinician Skills					
	Fidelity Checklist Q's 16-17	97%	.98		
	DBR Q's 2,3,5&6	96%	.89		
Engagement					
	Attrition	27%	N/A		
	Attendance	74%	N/A		
	Screens On	76%	N/A		
	DBR Q4	90%	.73		
	Fidelity Checklist Q's 13-15	90%	.98		
				30/64=47%	Observer 1=.97 Observer 2= .96 Total=.97

DMind Online Project Group Member Satisfaction

Group member satisfaction for the project was determined by asking group members to complete the *DMind Online Group Project* Satisfaction Survey during the posttest portion of the current study, calculating individual scores for each participant and then aggregating the data so that overall group satisfaction could be compared throughout demographic groups of age, sex and race.

Age. *DMind Online Group Project* participants were divvied dichotomously within the age category as being either typically middle-school aged (11-13 years old) or high-school aged (14-17). Middle school-aged participants (n=17) gave an overall satisfaction rating of 87% and high school-aged participants (n=13) gave an overall satisfaction rating of 86%. There were no statistically significant findings between age groups (p>.05).

Sex. *DMind Online Group Project* participants were divvied into 3 categories for sex (female, male or other). Female participants (n= 11) gave an overall satisfaction rating of 89%, male participants (n= 17) gave an overall satisfaction rating of 85% and other participants (n= 2) gave an overall satisfaction rating of 84%. There were no statistically significant findings between groups according to sex (p>.05).

Race. *DMind Online Group Project* participants were divvied dichotomously within the race categories of youth or color or white youth. Youth of color (n=6) gave an overall satisfaction rating of 86% and white youth (n=24) gave an overall satisfaction rating of 86%. There were no statistically significant findings between groups according to race (p>.05).

Table 5.3 gives visual representation of the overall participant satisfaction ratings of the *DMind Online Group Project* according to demographic group.

Table 5.3

DMind Online Group Project Satisfaction Rating

Demographic Group	Category	Sample Size (*n*)	Total Make Up of Group Participants (%)	Overall Satisfaction Rating	Statistical Significance Between Groups ($p<.05$)	Total Project Satisfaction Rating
Age						
	Middle School-Aged (11-13)	17	57%	87%	No	
	High School-Aged (14-17)	13	43%	86%	No	
Sex						
	Female	11	37%	89%	No	
	Male	17	57%	85%	No	
	Other	2	0.07%	84%	No	
Race						
	Youth of Color	6	20%	86%	No	
	White Youth	24	80%	86%	No	
						86%

DMind Online Group Project Measurement Internal Reliability

Internal reliability for the selected measures in the *DMind Online Group Project* indicate *good* to *excellent* Cronbach alpha scores for all measures (Streiner, 2003). Further, all measures (with the exception of the UCLA-PTSD and GAD-7) demonstrate equal or superior internal reliability to their cited references and the researcher-devised *DMind Online Group Project Satisfaction Survey* demonstrates *excellent* internal reliability ($\alpha= 0.92$) within the study. Table 5.4 indicates the Cronbach Alpha scores for the measures utilized within the *DMind Online Group Project* and internal reliability scores within the relevant literature.

Table 5.4

DMind Online Group Project Measurement Internal Reliability

Scale Name	Current Study Internal Reliability (α)	Benchmark Reporting Internal Reliability (α)	Benchmark citation
MAAS	.90	.84	(Benn, 2004)
CYRM	.85	.75-.85	(Liebenberg, et.al, 2013)
PSS	.87	.82	(Cohen, et.al, 1994)
UCLA-PTSD	.92	.93	(Rolon-Arroyo, et.al., 2020)
CSE	.97	.80-.91	(Chesney, et al., 2006)
CSC	.92	.81-.83	(Sutton, et.al, 2017)
PHQ 8-A	.94	.89	(Johnson, et.al, 2002),
GAD 7	.90	.92	(Spitzer, et al., 2006),
SDQ	.82	.73	(Goodman, 2001),
DMind Satisfaction Survey	.92	N/A	N/A

*$\alpha \geq 0.9$ = Excellent. $0.7 \leq \alpha > 0.9$ = Good. $0.6 \leq \alpha \geq 0.7$= Acceptable. $0.5 \leq \alpha \geq 0.6$=Poor. $\alpha < 0.5$ Unacceptable (Streiner, 2003).

Research Aim Two

The purpose of Research Aim Two was *to examine the short-term pretest to posttest differences in social and emotional and mindfulness outcomes for program participants*. Following the narrative description, results for Research Aim Two, *t* scores, *p* values and Cohen's *d* scores for effect size are depicted in Table 5.5. Additionally, figures are provided to depict pretest to posttest difference in mean scores for Anxiety, Depression and PTSD along with diagnostic cutoff scores and a figure is provided to depict the pretest to posttest difference in mean scores for perceived stress, along with the mean given in the cited benchmark reporting for the Perceived Stress Scale (Cohen, 1994).

It should be noted that in the original analysis, three of the 12 sample t tests for Research Aim Two showed violation to normality and skewed distribution. Upon further investigation, it was determined that one outlier was present in all three skewed distributions and removal of this one outlier resolved all normality violation for the tests

associated with this targeted research aim. Consultation with the research team led to the decision to remove this outlier from all sample t tests for Research Aim Two to provide and report more generalizable findings.

Stress Resilience Outcomes

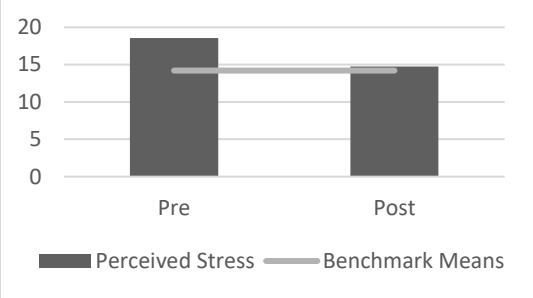
Stress resilience outcomes were measured by observing the pretest to posttest difference of participant-reported responses on the Children and Youth Resilience Measure, Personal Resilience subscale (CYRM-PR), the Perceived Stress Scale (PSS) and the UCLA-Post Traumatic Stress Disorder index.

CYRM-PR. Within the selected sample, no statistically significant pretest to posttest difference were detected for personal resilience (t (28) =1.46, p>.05, d =.23). However, small effect sizes were present, and analysis demonstrated an increase in pretest (M=40.7, SD= 4.4) to posttest (M=41.8, SD=4.9) increase in youth personal resilience.

PSS. Within the selected sample, statistically significant pretest to posttest differences with medium treatment effects were detected for perceived stress (t (28) = -4.72, p<.001, d=-.51). Analysis demonstrated a pretest (M=18.6, SD=7.6) to posttest (M=14.8, SD=7.2) decrease in perceived stress. Given the theoretical importance of the PSS measure to the study and the highly significant, medium treatment effects detected, visual representation of the pretest to posttest difference along with benchmark means (Cohen, 1994) for the PSS measure are depicted in figure 5.1.

Figure 5.1

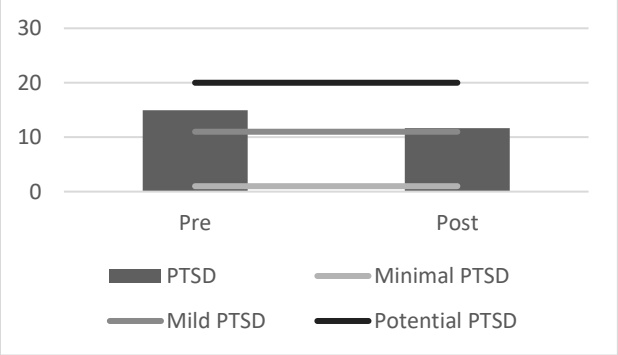
Pretest to Posttest Differences in PSS (n=30) with Benchmark Reported Mean Comparison



UCLA-PTSD. Within the selected sample, statistically significant pretest to posttest differences with small treatment effects were detected for PTSD (t (28) = -2.45, p <.05, d=-.35). Analysis demonstrated a pretest (M=14.9, SD=9.1) to posttest (M=11.7, SD=9.8) decrease in PTSD symptoms. Figure 5.2 gives visual representation of pretest to posttest differences between with PTSD along with diagnostic cutoff scores for PTSD.

Figure 5.2

Pretest to Posttest Differences in PTSD (n=30) with Diagnostic Cutoff Scores



Self-Awareness Outcomes

Self-awareness outcomes were measured by observing the pretest to posttest difference of participant-reported responses on the Coping Self-Efficacy Scale (CSE) and the Self-Compassion Scale-Short Form (SCS-C).

CSE. Within the selected sample, statistically significant pretest to posttest differences with small treatment effects were detected for coping self-efficacy (t (28) = 3.47, p<.01, d=.41). Analysis demonstrated a pretest (M=158.9, SD=54.5) to posttest (M=178.2, SD=44.3) increase in coping self-efficacy.

SCS-C. Within the selected sample, statistically significant pretest to posttest differences with small treatment effects were detected for self-compassion (t (28) = 2.32, p<.05, d = .30). Analysis demonstrated a pretest (M=26.2, SD=10.7) to posttest (M=39.2, SD=9.3) increase in self-compassion.

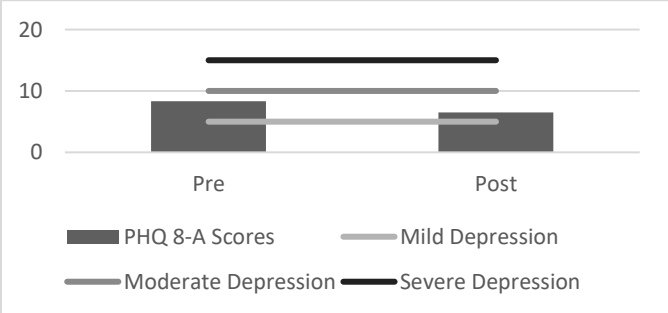
Emotional Regulation Outcomes

Emotional regulations outcomes were measured by observing the pretest to posttest difference of participant-reported responses on the Personal Health Questionnaire for Adolescents (PHQA-8), the Generalized Anxiety Disorder scale (GAD-7) and the Strengths and Difficulties Questionnaire, Emotional Symptoms subscale (SDQ-ES).

PHQA-8. Within the selected sample, no statistically significant pretest to posttest difference were detected for depression (t (28) =-1.69, p>.05, d =-.28). However, small effect sizes were present, and analysis demonstrated a pretest (M=8.3, SD= 7.0) to posttest (M=6.5, SD=5.9) decrease in depression. Figure 5.3 gives visual representation of pretest to posttest differences along with diagnostic cutoff scores for depression.

Figure 5.3

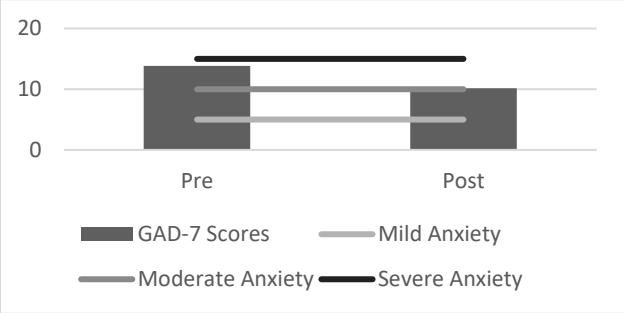
Pretest to Posttest Differences in Depression (n=30) with Diagnostic Cutoff Scores



GAD-7. Within the selected sample, statistically significant pretest to posttest differences with small treatment effects were detected for anxiety (t (28) =-2.81, p<.01, d=-.39). Analysis demonstrated a pretest (M=13.8, SD=9.2) to posttest (M=10.2, SD=9.7) decrease in anxiety. Figure 5.4 gives visual representation of pretest to posttest differences along with diagnostic cutoff scores for anxiety.

Figure 5.4

Pretest to Posttest Differences in Anxiety (n=30) with Diagnostic Cutoff Scores



SDQ-ES. Within the selected sample, no statistically significant pretest to posttest difference were detected for other emotional symptoms (t (28) =-1.95, p>.05, d =-.26). However, small effect sizes were present, and analysis demonstrated a pretest (M=5.0, SD= 2.9) to posttest (M=4.3, SD=2.7) decrease in other emotional symptoms.

Healthy Relationships Outcomes

Healthy relationships outcomes were measured by observing the pretest to posttest difference of participant-reported responses on the Children and Youth Resilience Measure, Relational Resilience subscale (CYRM-RR), and the Strengths and Difficulties Questionnaire Peer Problems subscale (SDQ-PP) and Prosocial Behavior subscales (SDQ-PS).

CYRM-RR. Within the selected sample, no statistically significant pretest to posttest differences were detected for relational resilience outcomes and treatment effects were negligible (t (28) = 0.452, p>.05, d =.07).

SDQ-PP. Within the selected sample, no statistically significant pretest to posttest differences were detected for peer problems and treatment effects were negligible (t (28) = 0.613, p>.05, d =.09).

SDQ-PS. Within the selected sample, no statistically significant pretest to posttest differences were detected for peer problems and treatment effects were negligible (t (28) = -0.346, p>.05, d =-0.07).

Mindfulness Outcomes

Mindfulness outcomes were measured by observing the pretest to posttest difference of participant-reported responses on the Modified Mindful Attention Awareness Scale for Children (MAAS-C).

MAAS-C. Within the selected sample, statistically significant pretest to posttest differences with small (nearing medium) treatment effects were detected for mindfulness (t (28) =- 2.8, p >.05, d =- .48). Analysis demonstrated a decrease in pretest (M= 53.3, SD= 13.8) to posttest (M=47.1, SD=12.2) mindfulness scores. (Please note that the MAAS-C is worded negatively resulting in lower scores being favorable to higher scores for this measure).

Table 5.5

Pretest to Posttest Differences in Outcomes for the DMind Online Group Project

Measure	Pretest Mean	Pretest (SD)	Posttest Mean	Posttest (SD)	*t*(*df*=28)	*p*<.05	Pretest to Posttest Treatment Effects (*d*)
MAAS-C	53.344	(13.785)	47.138	(12.156)	-2.830	**0.009****	-0.475
CYRM-PR	40.690	(4.384)	41.759	(4.889)	1.456	0.157	0.229
PSS	18.552	(7.600)	14.759	(7.244)	-4.718	**5.98e-.05*****	-0.509
UCLA-PTSD	14.931	(9.145)	11.655	(9.766)	-2.425	**0.022***	-0.345
CSE	156.862	(54.468)	178.241	(44.323)	3.471	**0.002***	0.414
SCS-C	36.172	(10.661)	39.241	(9.249)	2.321	**0.028***	0.303
PHQA-8	8.310	(7.000)	6.483	(5.871)	-1.690	0.102	-0.280
GAD7	13.828	(9.247)	10.172	(9.667)	-2.811	**0.009****	0.386
SDQ-ES	5.000	(2.940)	4.276	(2.698)	-1.952	0.061	-0.255
CYRM-RR	30.791	(3.802)	31.034	(3.257)	0.452	0.655	0.067
SDQ-PP	2.380	(1.821)	2.552	(2.063)	0.613	0.545	0.088
SDQ-PS	8.276	(1.645)	8.172	(1.391)	-0.346	0.732	-0.068

*$p < .05$. **$p < .01$. ***$p < .001$

***d* - .2<*d*>.49=small effects. .5<*d*>.79=medium effects. *d*>.8=large effects (McLeod, 2019).

Research Aim Three

The purpose of Research Aim Three was *to explore the correlated nature between the psychoeducational and experiential-related outcomes for program participants.* Following the narrative, table 5.2 illustrates of the findings with means, standard deviations, and correlations for the variables of interest.

Mindfulness and Personal Resilience

Within the selected sample, a statistically significant (positive) correlation was detected between youth-reported mindfulness (*M*=52.5, *SD*=15.0) and personal resilience (*M*=41.1, *SD*=4.7) *r* (38) =.49, *p*<.001. The measures shared 24% of their variances,

representing a small effect. No normality violations were apparent in the data.

Mindfulness and Relational Resilience

Within the selected sample, a statistically significant (positive) correlation was detected between youth-reported mindfulness (*M*=52.5, *SD*=15.0) and relational resilience (*M*=29.85, *SD*= 4.49) *r* (38) =.61, *p*<.001. The variables shared 37% of their variances, representing a small effect. Normality violations were apparent in the data, so significance results should be approached with caution.

Mindfulness and Coping Self-Efficacy

Within the selected sample, a statistically significant (positive) correlation was detected between youth-reported mindfulness (*M*=52.5, *SD*=15.0) and coping self-efficacy (*M*=157.2, *SD*= 55.4) *r* (38) =.70, *p*<.001. The variables shared 49% of their variances, representing a small (near medium) effect. No normality violations were apparent in the data.

Mindfulness and Self-Compassion

Within the selected sample, a statistically significant (positive) correlation was detected between youth-reported mindfulness (*M*=52.5, *SD*=15.0) and self-compassion (*M*=35.9, *SD*= 10.9) *r* (38) =.64, *p*<.001. The variables shared 41% of their variances, representing a small effect. No normality violations were apparent in the data.

Mindfulness and Prosocial Behavior

Within the selected sample, a no statistically significant correlation was detected between youth-reported mindfulness (*M*=52.5, *SD*=15.0) and prosocial behavior (*M*=8.2,

SD= 1.6) *r* (38) =. -0.07, *p*>.05. Normality violations were apparent in the data, so results should be approached with caution.

Mindfulness and PTSD

Within the selected sample, a statistically significant (negative) correlation was detected between youth-reported mindfulness (*M*=52.5, *SD*=15.0) and PTSD (*M*=15.2, *SD*=10.5), *r* (38) =-0.69, *p*<.001. The variables shared 48% of their variances, representing a small (near medium) effect. Normality violations were apparent in the data, so significance results should be approached with caution.

Mindfulness and Perceived Stress

Within the selected sample, a statistically significant (negative) correlation was detected between youth-reported mindfulness (*M*=52.5, *SD*=15.0) and Perceived Stress (*M*=19.0, *SD*=8.4), *r* (38) =-0.73, *p*<.001. The variables shared 53% of their variances, representing a medium effect. No normality violations were apparent in the data.

Mindfulness and Peer Problems

Within the selected sample, a statistically significant (negative) correlation was detected between youth-reported mindfulness (*M*=52.5, *SD*=15.0) and Peer Problems (*M*=2.3, *SD*=1.9), *r* (38) =-0.44, *p*<.001. The variables shared 19% of their variances, representing a small effect. Normality violations were apparent in the data, so significance results should be approached with caution.

Mindfulness and Anxiety

Within the selected sample, a statistically significant (negative) correlation was detected between youth-reported mindfulness (*M*=52.5, *SD*=15.0) and Anxiety (*M*=14.3, *SD*=10.8), *r* (38) =-0.76, *p*<.001. The variables shared 58% of their variances, representing a medium effect. Normality violations were apparent in the data, so significance results should be approached with caution.

Mindfulness and Depression

Within the selected sample, a statistically significant (negative) correlation was detected between youth-reported mindfulness (*M*=52.5, *SD*=15.0) and Depression (*M*=8.9, *SD*=7.3), *r* (38) =-0.75, *p*<.001. The variables shared 56% of their variances, representing a medium effect. Normality violations were apparent in the data, so significance results should be approached with caution.

Mindfulness and Emotional Symptoms

Within the selected sample, a statistically significant correlation was detected between youth-reported mindfulness (*M*=52.5, *SD*=15.0) and Emotional Symptoms (*M*=5.0, *SD*= 3.0), *r* (38) =-0.76, *p*<.001. The variables shared 58% of their variances, representing a medium effect. Normality violations were apparent in the data, so significance results should be approached with caution.

In summary, statistically significant correlations within the directions hypothesized were detected between mindfulness outcomes and all social and emotional outcomes (with the exception of prosocial behavior). A table of scatterplot graphs for the significant correlations can be found in Appendix H. Table 5.6 depicts the means,

standard deviations and *r* values and *p* values between mindfulness and all of the targeted social and emotional outcomes in the *DMind Online Group Project Correlation Table* associated with Research Aim Three.

Table 5.6

DMind Online Group Project Correlation Table

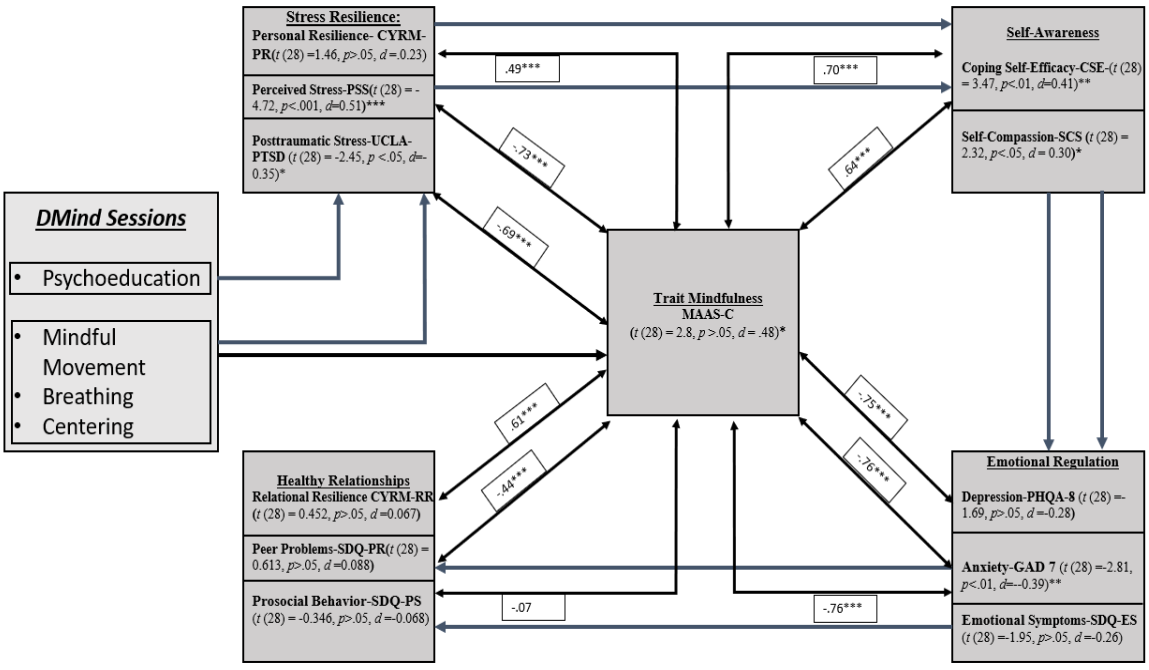
Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11
1. Mindfulness	52.5	15.0											
2. Personal Resilience	41.1	4.7	.49**										
3. Relational Resilience	29.9	4.5	.61**	.44**									
4. Coping Self-Efficacy	157.2	55.4	.70**	.71**	.62**								
5. Self-Compassion	35.9	10.9	.64**	.57**	.51**	.79**							
6. Prosocial Behavior	8.2	1.6	-.07	.20	.08	.13	.05						
7. PTSD	15.2	10.5	-.69**	-.59**	-.55**	-.71**	-.72**	.05					
8. Perceived Stress	19.0	8.4	-.73**	-.52**	-.52**	-.79**	-.80**	.19	.82**				
9. Peer Problems	2.4	1.9	-.44**	-.63**	-.44**	-.54**	-.58**	-.05	.63**	.50**			
10. Anxiety	14.3	10.8	-.76**	-.57**	-.60**	-.75**	-.84**	.01	.86**	.85**	.66**		
11. Depression	8.9	7.3	-.75**	-.58**	-.69**	-.80**	-.82**	.02	.82**	.81**	.63**	.89**	
12. Emotional Symptoms	5.0	3.0	-.76**	-.49**	-.43**	-.69**	-.76**	.11	.77**	.81**	.65**	.88**	.80**

*=p<.05, **=p<.01, ***=p<.001

Figure 5.5 depicts the findings from Research Aims Two and Three as organized within the previously illustrated *DMind Online Group Project* Theoretical Model of Change. For Research Aim Two, posttest to pretest differences are listed in *t* scores, *p* values and *d* effect sizes within the four boxes indicating the psychoeducational constructs of *Stress Resilience, Self-Awareness, Emotion Regulation* and *Healthy Relationships* and within the center boxy, indicating the experiential construct of *Trait Mindfulness.* For Research Aim Three, *r* values and *p* values are listed alongside the arrows connecting the psychoeducational constructs of *Stress Resilience, Self-Awareness, Emotion Regulation* and *Healthy Relationships* with the experiential construct of *Trait Mindfulness*.

Figure 5.5

DMind Online Group Project Theoretical Model of Change with Statistical Findings



*=p<.05, **=p<.01, ***=p<.001

Chapter 6

Discussion

The purpose of the *DMind Online Group Project* was to determine the feasibility and short-term effectiveness of the online adaptation of the *DMind* Group Curriculum and to explore the correlated nature of the selected social and emotional outcomes with the mindfulness outcome within the selected sample of disaster-impacted youth. Results from the current study demonstrate the online adaptation and delivery of the *DMind Online Group Project* was conducted with high fidelity (i.e., facilitators implemented with consistency and quality, participants were engaged) and high satisfaction ratings of the program regardless of demographic group. Measurements utilized within the study demonstrate good to excellent internal reliability. Findings also demonstrate short-term improvement in several of the targeted outcomes with small to medium treatment effects for program participants, suggesting the overall feasibility, favorability and short-term efficacy of the *DMind Online Group Project*. The results from this study also demonstrate a significant relationship between *trait mindfulness* and various social and emotional outcomes within the selected sample, indicating the importance of utilizing a combined approach for SEL and MBI's in a universal application of services to improve outcomes for youth impacted by disasters.

Research Aim One

Evidence of the feasibility findings for Research Aim One were organized into the categories of program fidelity, group facilitator clinical skills, participant engagement and satisfaction and measurement internal reliability.

Durlak and Dupree (2008) report that fidelity ratings are present in only approximately 5% of studies, yet fidelity has been clearly established as a moderator in program effectiveness. Unsurprisingly, no literature examining program fidelity or group facilitator skills was present in the review of previously cited *DMind* literature, indicating that these favorable outcomes contribute to the field of research in a unique and meaningful way. This is of added importance because this study seeks to create the structure and findings necessary for future adequately powered, randomized control, replication studies. Implementing operationalized measures for fidelity create opportunity for such replication and ensures that studies can more effectively and precisely measure the overall success of the program under evaluation.

The attendance and retention rates of participants for the current study may initially appear low, but a look at the relevant literature assists by putting these findings in context. Clarke et al. (2015) shows that rates of non-completion were moderate to high across numerous online studies, compared to a relatively high retention rate of school-based interventions. In fact, their review indicates attrition rates range anywhere from 31%-70% (Clarke et al., 2015), indicating that the attrition rate for the current study (27%; as described in Chapter Five), is lower than the given range of expected drop out rates for similar studies. The notion that attendance and completion rates for online intervention studies are lower than those of school-based intervention studies are intuitive, given the fact that school is compulsory for youth. However, as previously discussed, school-based interventions are often disrupted and unattainable in times during and immediately following a disaster (Pfefferbaum, et al., 2014). Therefore, it is

warranted to continue research aimed at improving participant engagement and retention for online behavioral health programs targeted towards disaster-impacted youth.

Program satisfaction ratings were generally high (86%) amongst program participants. While there were no statistically significant differences in satisfaction ratings between demographic groups, there were slightly higher satisfaction ratings for females (89%) than there were for male (85%). These findings also align with those from the review by Clarke et al. (2015), which demonstrates that online universal behavioral health interventions with adolescent youth are generally favorable, with slightly higher satisfaction ratings amongst female participants than male participants. Given the previously mentioned emphasis on using universal intervention strategies to reach youth from various backgrounds and demographic groups, especially those at higher risk, it is especially favorable that there were no statistically significant differences in satisfaction ratings between age, sex or racial demographic groups.

The reliability findings of selected measures within the *DMind Online Group Project* also provide strong support of the overall feasibility for Research Aim One. The internal reliability of the selected measures of the study not only rated *good* to *excellent*, according to Streiner (2003), but they also met or surpassed the Cronbach alpha scores given for nearly all of the validation studies selected to support the use of each measure within the study.

Research Aim Two

Results from Research Aim Two demonstrate statistically significant small to medium treatment effects for the targeted treatment outcomes of: mindfulness, perceived

stress, PTSD, coping self-efficacy, self-compassion, generalized anxiety, small treatment effects without statistical significance for the targeted outcomes of: personal resilience, depression and other emotional symptoms and negligible treatment effects without statistical significance for the targeted outcomes of: relational resilience, peer problems and prosocial behavior for the selected sample of the *DMind Online Group Project.* The favorable effectiveness results from the *DMind Online Group Project* align with the findings from previous literature; that universal programs for youth can impact positive mental health and reduce risk behaviors in the general population (Skeen et al., 2019) and can reduce PTSD symptomology in youth impacted by disasters (Fu & Underwood, 2015). Although relatively novice in its contribution to the literature, online applications for universal mental health programs also hold promise to improve youth outcomes. Systematic review by Clarke et al. (2015) concludes that, "results from the mental health promotion interventions indicate that there is some evidence that skills-based interventions presented in a module-based format can have a significant impact on adolescent mental health" (p.90).

Research Aim Three

Results indicate that there is a statistically significant relationship, with small to medium effect, between mindfulness and all of the SEL- based outcomes of the intervention (with the exception of prosocial behavior) and that the direction of these correlations were hypothesized correctly. The basis of this exploratory aim is justified in the literature review chapter of this manuscript, outlining the complimentary and interconnected core treatment components of SEL and MBI programs. It was indicated earlier in this manuscript that SEL programs have been clearly documented to increase

health promotion and decrease health risks in youth participants (Durlak et al., 2011; Sklad et al., 2012; Taylor et al., 2017), that MBI's can improve youth outcomes by reducing psychological symptoms (Zoogman et al., 2014) increasing resilience and decreasing stress and emotional problems (Zenner et al., 2014) and that there are potential benefits of integrating core components of SEL and MBI interventions to improve youth outcomes (Brensilver, 2016 & Saltzman 2014). The statistically significant findings of the correlational analysis strengthen this proposition and justify the expansion of research in this area. This is of particular importance in the universal model of intervention when the primary focus is to impact multiple outcomes within the general population regardless of symptomology and level of exposure to risk (Skeen, et al., 2019).

DMind Online Group Project Strengths and Limitations

The *DMind Online Group Project* had many strengths including fidelity outcomes that surpass that of the benchmark reporting, statistically significant treatment effects despite small sample size, and a high level of internal reliability amongst project measurements.

Analysis of the findings demonstrate excellent program fidelity, a high level of clinical skills implemented and a generally favorable response to the intervention throughout the demographic groups. A high level of attention was given to program adherence, research assistant training and the specialized adaptation of a classroom intervention into an online intervention to meet the unique demands and special needs of youth impacted by disaster in 2020. Given the small number of studies that include fidelity-related data in their research design and reported findings (Durlak & Dupree,

2008), this study provides a unique contribution to the literature and serves to operationalize fidelity-related outcomes for successful replication of studies in its kind.

It has been well documented that Type II errors (failing to find statistically significant treatment effects when they are in fact present) are often present in research studies with inadequately powered sample sizes (VanVoorhis & Morgan, 2007). Therefore, detected statistical significance within reported treatment effect for the targeted SEL and MBI outcomes in the current study were not anticipated. However, despite the small sample size within the current study, statistically significant findings, with small to medium effect sizes, were present throughout several of the included measures demonstrating favorable short-term outcomes for project participants. The initial findings of the current study, although limited in their ability to show causation (Davis, 2004), do indicate a relationship between the intervention and the pretest to posttest improvements of project participants (Davis, 2003) worth further exploration. Given the aforementioned attention to fidelity-operationalization, these findings further justify the proposition towards the replication of future similar studies.

A high level of attention to detail was given within the selected measures and only valid and reliable measures that were demonstrated as appropriate for the targeted age group of the project participants were selected for the pretest and posttest measures. As such, internal reliability for the measures met or surpassed benchmark reporting for all but one measure and all measures utilized within the current study, including the researcher-devised measure, indicated good to excellent internal reliability (Streiner, 2003). This attention to detail strengthened the measurement-related effects of external validity for the current study (Davis, 2004).

There were several limitations present within the research design of the current study. The research design of the *DMind Online Group Project* allowed for threats to internal and external validity including lack of randomization, control group assignment, an adequately powered sample size and significant findings within one targeted outcome of the study (Davis, 2004). The later potentially suggests a measurement issue within that theoretical construct indicating exploration within future replication studies.

Due to unforeseen and uncontrollable pandemic-related obstacles to participant recruitment and project implementation, the *DMind Online Group Project* had no randomized control group and was inadequately powered in sample size. The group participants were also homogenous in nature, with the majority of the participants being white males. The lack of control group or randomization led to threats in internal validity, including selection bias, maturation, and history (Davis, 2004). The underpowered, homogenous sample led to normality violations within the distribution of the findings and impacted generalizability of the findings (Davis, 2004). Limited sample size also prevented the ability to draw any definitive conclusions regarding program attrition rates according to demographic group. It is hopeful that this study can be replicated in the future and the new cohort's data be aggregated into the original cohort's data, to produce statistical findings with generalizable outcomes.

There was only one time point for posttest data collection (limiting efficacy data to short-term outcomes only), and efficacy data was only collected by individual, thus failing to triangulate the findings. Finally, inherent to many online interventions, there were technological issues present as well. Many participants had varying degrees of Wi-Fi connectivity issues resulting in some degree of audio or visual disturbances that

inherently disrupted the therapeutic environment as well as the practical application of the core treatment components.

One interesting observation from the results of the current study demonstrate that within the four key social and emotional outcomes (*Stress Resilience, Self-Awareness, Emotion Regulation* and *Healthy Relationships*), *Healthy Relationships* was the only targeted outcome to demonstrate no significant favorable findings within the selected measures. One possibility for this issue may be due to the aforementioned violations to normality for these findings, which limit their generalizability. Another possibility is due to the lack of sensitivity in the SDQ measure (Goodman, 2003). The SDQ allows participants to rate their responses on a 3-point scale (0,1 or 2). Yet available research demonstrates that increasing the number of responses on a scale increases sensitivity and it has been established that a 7-point Likert scale is the ideal scale range and produces a more accurate measure with appropriate findings (Finstad, 2010). It is possible that between the risks associated with measurement lack of sensitivity (Finstad, 2010) and a generally underpowered sample size (VanVoorhis & Morgan, 2007), that positive change within participants' healthy relationships was present but not accurately detected in the current study. Future replication studies with an adequately powered sample sized and a more sensitized scale to measure *Healthy Relationships* will help determine if the lack of significant results and/or treatment effects within this domain are due to measurement issues or another not-yet identified confounding variable such as curriculum weakness, treatment dosage, etc.

Implications for Social Work Practice

Given the lack of early detection and screening available within our current societal infrastructure (Merikangas et al., 2011), providing a universally implemented treatment program can break down barriers and have a far-reaching impact on all youth regardless of their level of exposure and symptomology. Further, these services can be offered proactively, before a disaster even occurs. Pfefferbaum et al (2014) report that universally delivered behavioral health programs can be successfully implemented in a wide range of settings, and amongst a wide range of time points, both as prevention before a disaster occurs and as a risk mitigation strategy to youth already impacted by disaster in both the short- and long-term. This implication has meaningful benefit for the interchangeable and complimentary health promotion and health risk prevention outcomes often associated with universal public health strategies (WHO, 2004).

Within this study, the theoretical justification for combining aspects of both psychoeducation and experiential opportunities was observed directly. Throughout the course of the project, some youth participated more in psychoeducational discussions, while others demonstrated more engagement and investment in one or more of the experiential activities. Similarly, some voiced a higher satisfaction or comfort with one type of activity and less satisfaction of comfort with the other type of activity, while the inverse was true for other participants. This observation further strengthens the notion that youth benefits may increase, especially within a universally delivered modality, when various activities and opportunities for participation are offered throughout the intervention.

Participant engagement and retention issues were observed in the current study and are also noted in the existing literature supporting the use of the online delivery of universal youth interventions as well (Clarke, et al., 2015). Therefore, exploration into the addition of potential treatment activities that foster engagement and incentivize continued attendance and participation is warranted. Finally, an adequately powered, randomized study can also offer insight into treatment dosage- an element not yet fully understood within the research in this area.

Overall, the observations and outcomes from the current study aligned with previous research and the theoretical justification for the proposed theory of change while also suggesting a course for future replication studies aimed at improving social, emotional and mindfulness outcomes for disaster-impacted youth. Online, universally delivered, Mindfulness and SEL programs have the potential to positively impact behavioral health trajectories for disaster-impacted youth in a significant and meaningful way.

Conclusion

Traumatic stress can negatively impact youth behavioral health outcomes, not only in the short-term, but in the long term as well (Glanz, et al., 2008). Further, research indicates that if left untreated, these long-term effects can carry over into future generations and the cycle of untreated behavioral health problems, with associated social and emotional factors, are often passed down from parent to child (Fairbank, 2008). Given the previously mentioned barriers to behavioral health treatment delivery to youth in general, and specifically to disaster-impacted youth, creating innovative approaches to

care is critical (Pfefferbaum, 2014). While everyone is at risk for traumatic stress and related behavioral health problems following a disaster, children are especially at risk (NCTSN, n.d.) and these risks are disproportionately experienced by youth with internalizing symptoms (Merikangas et al., 2011) and youth of color (Magee & Thompson, 2019; McGuire & Miranda, 2008).

Two common frameworks for universally implemented youth behavioral health programs, SEL and MBI's, are complementary in their treatment approach. SEL offers psychoeducation and MBI's offer experiential treatment components (Latieri & Zakrewski, 2015). While SEL and MBI's are both well-supported in the literature on universal youth behavioral health programs, they are rarely integrated together, despite the empirical suggestion for enhanced youth outcomes. One program, *DMind,* offers an integrated curriculum, including elements of SEL and MBI's in its core treatment components. The *DMind* curriculum is historically offered in school-settings, but the tumultuous nature of the year of 2020 created several school-based disruptions for youth on a national and global level. The Covid-19 pandemic of 2020 also produced a unique opportunity to study the feasibility and treatment effects within an innovative, online approach to the delivery of the *DMind* curriculum. Results from the *DMind Online Project* demonstrate high feasibility and statistically significant treatment effects and correlational associations amongst several targeted outcomes.

Given the detrimental and potentially long-term effects of disaster-related stress and trauma on youth and our ability to utilize internet-related technology to bridge the gap between disaster-impacted youth and the currently present barriers to treatment, the

value of and need for similarly structured replication studies to evaluate universally delivered, online program to reach disaster-impacted youth has been clearly established.

The implications within the current study are evident. The universal, online application of SEL-based MBI programs can significantly improve social, emotional and mindfulness outcomes for disaster-impacted youth. Technology offers innovation within treatment design and can reach youth within their homes, mitigating the isolative effects of disaster and offering emotional support at a very critical time in a youth's development. The potential short- and long-term benefits to such an approach can not be overstated.

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Appendix A

MU IRB Approval Letter

Institutional Review Board
University of Missouri-Columbia
FWA Number: 00002876
IRB Registration Numbers: 00000731, 00009014

482 McReynolds Hall
Columbia, MO 65211
573-882-3181
irb@missouri.edu

February 06, 2021

Principal Investigator: Toby Mackenzie Mills

Department: MO Prevention Science Inst

Your Expedited Application entitled Dynamic Mindfulness Program Evaluation: A Group Mindfulness Intervention for Middle and High School Students was reviewed and approved by the MU Institutional Review Board according to the terms and conditions described below:

IRB Project Number: 2025166

IRB Review Number: 297704

Funding Source: Research Council Grant

Initial Application Approval Date: July 10, 2020

Approval Date: February 05, 2021

IRB Expiration Date: February 05, 2022

Level of Review: Expedited

Application Status: Approved

Project Status Active: Open to Enrollment

Risk Level: Minimal Risk

Child Category: 46.404/50.51

Type of Consent: Parental Consent with Electronic Signature

HIPAA Category: No HIPAA

Approved Documents:

- IRB Approved Consent Document - Parent & Child both
- Updated recruitment flier
- Updated *DMind* protocol_1-29-21.v2

- Updated parent recruitment email script
- Classroom atmosphere rating scale
- Description of updated proposed measurements with citations

The principal investigator (PI) is responsible for all aspects and conduct of this study. The PI must comply with the following conditions of the approval:

1. COVID-19 Specific Information Enrollment and study related procedures must remain in compliance with the University of Missouri regulations related to interaction with human participants following guidance at research.missouri.edu/about/covid-19-info.php. In addition, any restarting of in-person research activities must comply with the policies and guiding principles provided at research.missouri.edu/about/research-restart.php, including 1. appropriate approvals for return-to-work authorization for individuals as well as human subject research projects.
2. No subjects may be involved in any study procedure prior to the IRB approval date or after the expiration date.
3. All unanticipated problems must be reported to the IRB on the Event Report within 5 business days of becoming aware of the problem. Unanticipated problems are defined as events that are unexpected, related or possibly related to the research, and suggests the research places subjects or others at a greater risk of harm than was previously known or recognized. If the unanticipated problem was a death, this is reportable to the IRB within 24 hours on the Death Report.
4. On-site deaths that are not unanticipated problems must be reported within 5 days of awareness on the Death Report, unless the study is such that you have no way of knowing a death has occurred, or an individual dies more than 30 days after s/he has stopped or completed all study procedures/interventions and required follow-up.

5. All deviations (non-compliance) must be reported to the IRB on the Event Report within 5 business days of becoming aware of the deviation.
6. All changes must be IRB approved prior to implementation unless they are intended to reduce immediate risk. All changes must be submitted on the Amendment Form.
7. All recruitment materials and methods must be approved by the IRB prior to being used.
8. The project-generated annual report must be submitted to the IRB for review and approval at least 30 days prior to the project expiration date. If the study is complete, the Completion/ Withdrawal Form may be submitted in lieu of the annual report.
9. Securely maintain all research records for a period of seven years from the project completion date or longer depending on the sponsor's record keeping requirements.
10. Utilize the IRB stamped consent documents and other approved research documents located within the document storage section of eCompliance. These documents are highlighted green.

If you are offering subject payments and would like more information about research participant payments, please click here to view the MU Business Policy and Procedure: http://bppm.missouri.edu/chapter2/2_250.html If you have any questions, please contact the IRB Office at 573-882-3181 or muresearchirb@missouri.edu.

Thank you,
MU Institutional Review Board

Appendix B

MU IRB-Approved Consent (Parent and Child)

Consent Form
Parent/Guardian Version

DMind Program for Middle and High School Students

This is a research study. Research studies help us to answer questions that may improve our understanding of human behavior, attitudes, beliefs, and interactions. We are conducting this research study to see how mindfulness and social and emotional learning impact youth stress, trauma, coping and resilience.

Research studies involve only individuals who choose to participate, participation is voluntary. You have received this form because we ask your permission for your child to take part in this research study. This consent form tells you why we are doing the study, and what will happen if your child joins the study Please take as much time as you need to read this consent form. If you have any questions or concerns, contact information is provided at the bottom of this form. We will only include your child in this study if you give us your permission first by signing this consent form.

What is DMind?

DMind (Dynamic Mindfulness) is a mindfulness based social and emotional learning curriculum for school aged youth. One of the only mindfulness programs backed by the Collaborative Association for Social and Emotional Learning (CASEL), DMind is a 16-session curriculum teaching students stress resilience, self-awareness, emotional regulation and healthy relationships. DMind will be delivered via live, interactive zoom sessions, by trained facilitators, during the month of March, 2021. Each session will last for approximately 45 minutes and 4 sessions will occur per week (Mondays-Thursdays). Each session includes lessons on the curriculum, discussion, and various mindfulness practices (focused attention, breathing practices and light physical movement).

What Is Involved in The Study?

Pre and Post Tests: Before the program begins and after the program ends, students will be asked questions about their social and emotional wellbeing in a survey, that will be accessible via tablet, desktop or laptop computer. Each survey will take approximately 45 minutes to complete. Responses to the survey questions are completely confidential.

Group Sessions: The DMind program involved 16 sessions, each lasting about 45 minutes. In each session, there will be a lesson taught, then students will share their experience, will practice focused attention and breathing practices and will perform light physical movements within the classroom environment. The sessions will be taught by trained facilitators via live, interactive zoom sessions. During the DMind groups, your child will learn skills associated with improved stress resilience, self-awareness, emotional regulation and healthy relationships.

Will my Child Receive Compensation for Participating in the Study?

Yes. All students who participate will be compensated for their time.

Students who are randomly selected for the control group will receive up to $40 ($20 for pretest completion and $20 for posttest completion).

Students who are randomly selected for the intervention group will receive the same compensation for pretest and posttest completion ($40 or $20 per survey) and they will receive additional compensation for participating in the intervention. The have the opportunity to earn an additional $40 total from a weekly stipend ($10 per week for each of the 4 weeks of the intervention).

What are my child's rights as a study participant?

Taking part in this study is voluntary. If you and child do decide to take part, you both have the right to change your mind and drop out of the study at any time. Whatever your and your child's decision, there will be no penalty to either of you in any way.

We will tell you about any new information discovered during this study that might affect your child's health, welfare, or change your mind about them taking part.

Whom Do I Call If I Have Questions or Would Like to Opt my Child Out of the Study?

If you have questions about the study, please contact:
Toby Mills at millsto@umsystem.edu.

If you want to talk privately about your rights or any issues related to your participation in this study, you can contact University of Missouri Research Participant Advocacy by calling 888-280-5002 (a free call), or emailing MUResearchRPA@missouri.edu

By signing below, my child and I agree to participate in the DMind study. We understand that my child's information will be kept confidential and will not be shared outside of the research study for any purpose. After completing the information listed below, an electronic copy of this forms will be emailed to you to keep for your records.

*To formally consent and agree to participate, please email Toby Mills for an electronic consent form to be emailed to you. Also, you will be asked to choose from the following group times:
3:00-3:45 PM
3:30-4:15 PM
4:00-4:45 PM
4:30-5:15 PM
5:00-5:45 PM
5:30-6:15 PM
6:00-6:45 PM
6:30-7:15 PM

Appendix C

MU IRB-Approved Protocol

Project Title: Dynamic Mindfulness Program Evaluation: A Group Mindfulness Intervention for Middle and High School Students
IRB Number: 2025166
Version Number: 3
Version Date: 02/22/2021
Principal Investigator: Toby Mills
Funding Source: MU Research Council Award

I. Research Objectives/Background

1. To determine if youth self-reported mindfulness is positively correlated with youth reported coping and resilience and negatively correlated youth reported stress and trauma when controlling for youth levels of exposure to pandemic-related stressors and exposure to discrimination and racial violence through pre-test survey data collection.
2. To identify whether DMind participants have posttest improvements in stress resilience, self-awareness, emotional regulation, and healthy relationships (proximal outcomes) as well as: improved health behaviors (distal outcomes) through pre- and post-test data collection.
3. Exploratory aim: To examine whether student exposure to DMind moderates outcomes by student demographics (i.e., sex, age/grade, race, and/or socio-economic status) through post test data collection.

II. Recruitment Process

As soon as IRB approval occurs, students will be recruited on an individual level by word of mouth, email and informational brochure, informing them of the potential risks and benefits of the program, the incentives for participation and contact information to inquire further about project participation.

III. Consent Process

1. Parent informed consent/child assent will be obtained via Qualtrics survey link with electronic signature.

IV. Inclusion/Exclusion Criteria

1. All interested youth, between 6^{th}-12^{th} grade (ages 11-17), in regular educational classes are eligible for participation in the study.

V. Number of Subjects

1. A maximum 130 students will be recruited and assigned to the intervention group for the DMind online group project.
2. This approximation allows for the greatest number of participants possible, within the given budget for adequate student incentivization.

VI. Study Procedures/Study Design

1. Study Purpose and Research Aims:

The purpose of this study is to test the feasibility and effectiveness of the Dynamic Mindfulness Group Curriculum (DMind) with middle and high school students. This efficacy trial will utilize a a one-group quasi experimental feasibility study with a maximum of 130 students.

The specific aims of the proposed study are:

1. To determine if youth self-reported mindfulness is positively correlated with youth reported coping and resilience and negatively correlated youth reported stress and trauma when controlling for youth levels of exposure to pandemic-related stressors and exposure to discrimination and racial violence through pre-test survey data collection.

2. To identify whether DMind participants have posttest improvements in stress resilience, and social and emotional learning skills (self-awareness, emotional regulation, and healthy relationships) through pre and post test data collection.

3. Exploratory aim: To examine whether student exposure to DMind moderates outcomes by student demographics (i.e., sex, age/grade, race, and/or socio-economic status) through post test data collection.

DMind Program Description:

DMind is an evidence-based, trauma-informed program that strengthens stress resilience and social-emotional learning (Frank, Bose, & Schrobenhauser-Clonan, 2014; Frank, Kohler, Peal, & Bose, 2017; Ramadoss & Bose, 2010). DMind enhances SEL learning by incorporating the experiential methods of action (movement), breathing, and centering (mental focus) into every session (Niroga Institute, n.d.). The DMind curriculum is divided into 4 different themes: stress-resilience, self-awareness, emotional regulation and healthy relationships. DMind has a total of 48, 15- minute sessions is developmentally appropriate for middle school and high school students. DMind sessions can be combined to occur in 1,2,or 3 session groups. For the purpose of this study, DMind will be implemented in 16, 45-minute online group sessions, via live interactive zoom sessions.

DMind Facilitation and Implementation:

Two DMind facilitators will be recruited, hired, and trained by completing the DMind 6-hour, on-demand online training. Additionally, each trained facilitator will receive a copy of the DMind facilitator manual, “Teaching transformative life skills to students: A comprehensive dynamic mindfulness curriculum” (Bose, Frank, & Malik, 2016). Following student recruitment, consent and assent, facilitators will implement the DMind curriculum via live, interactive zoom sessions. Researcher will also complete the DMind 6-hour on-demand training, will routinely check in with and provide support to facilitators, will be responsible for supervising or observing DMind sessions and will record observational classroom and fidelity checklist data.

Research Design:
The proposed study will utilize a one group quasi experimental feasibility study with approximately 130 students. Recruitment for participation will be extended to afterschool programs and various educational facilities. But students will be enrolled on an individual level. The DMind curriculum will be implemented by the trained DMind facilitators via live, interactive zoom sessions during regular class time instruction for all recruited and consented students. Describe the time commitment involved.

2. Participant responsibilities: Students will be asked to complete the following list of research-only actions:
    a. Complete pretest (Qualtrics survey approximately 45 minutes in length) during the month of February 2021.
    b. Complete posttest (Qualtrics survey approximately 45 minutes in length) during the week of March 29th.
    c. Additionally, DMind participants will be asked to participate via live interactive zoom sessions in 16, 45-minute group sessions. Each DMind class includes psychoeducation and the key elements of mindful movement, breathing practices, and centering practices.

VII. Potential Risks

1. Pre/Posttest: There is a chance that students may feel confused or frustrated during the pre/posttest implementation, or that they may feel too embarrassed to answer questions about their social and emotional wellbeing. This risk will be mitigated by provided technological support to students during the pre/posttest administrations, by making the pre/posttests as short and as easy to complete as possible and to remind students that their responses to questions are confidential.

   Intervention: There is a chance that students may feel bored, irritated, self-conscious or uninterested in the actual intervention. There is also a chance that students could become physically uncomfortable if they do not follow instructions for dynamic movement appropriately. Potential risks have sought to be mitigated by selecting an evidence-based curriculum that supports healthy adolescent development and with the plans to effectively train and support qualified facilitators for the program.

   Minimal Risk Statement: The DMind project is empirically supported in its efforts to improve student social and emotional learning and stress resiliency. It is very likely that the benefits from this project will far exceed the potential risks and that therefore, this study is of minimal risk to students. Include the plan for reporting unanticipated problems or deviations to the IRB. This plan must include a five-day reporting requirement to the IRB once becoming aware of an event.

2. Should any unexpected problems arise, group facilitators will express their concerns to the PI immediately and PI will contact the IRB within 5 days to discuss whether or not considerable changes to the proposed research design or study implementation need to occur.

VIII. Anticipated Benefits

1. It is projected that participated in the DMind online intervention will improve students' social and emotional learning outcomes, increase a sense of physical wellbeing and self-reported mindfulness traits, increase resilience and coping and decrease stress and trauma symptoms.
2. Students with improved outcomes listed above are projected to benefit their community by demonstrating enhanced academic and socially related outcomes.

IX. Compensation

All students who participate will be compensated for their time.

DMind participants will receive up to $80 for participation. This includes $20 for pretest completion and $20 for posttest completion and up to $40 total from a weekly participation stipend ($10 per week for 4 weeks total).

Compensation will be delivered by email in the form of gift cards. Students will receive pre and posttest compensation within 1 week of completing each survey and will receive participation stipends within one week of the completion of the intervention portion of the research study.

X. Data Safety Monitoring Plan

Research assistants are trained MSW practicum students. They have adequately been trained in DMind group intervention facilitation, crisis response and de-escalation and know their responsibilities as mandated reporters. Any behavior or disclosure mandating state reporting will be discussed with PI and the needed hotline will be made immediately.

In addition to the group facilitator, at least one other person (another research assistant or PI) will be present during each group session to assist with technology, provide behavioral intervention support. Observation to monitor program fidelity and student engagement will also occur for at least 1/3 of total group sessions during randomly selected dates throughout the intervention. Concerns about student behavior or participation will be discussed in weekly supervision.

Pre and posttest data will be collected via password protected Qualtrics survey. Each student participant will be given a secure link to complete their survey responses. All data will de-identified when it is converted from the password protected into a spreadsheet needed for data analysis with R studio software. A separate document linking student personal information to de-identified information (ie name-project study #) will be saved on a secure, password protected drive.

Describe the plan to monitor the data, if necessary. A plan is required for treatment and/or intervention studies, sensitive data are being collected, or there is a possibility for subjects to experience adverse events, etc.

XI. Multiple Sites

1. N/A. Online virtual program.

Appendix D

MU IRB-Approved Recruitment Flier

Dynamic Mindfulness

A Research Project Opportunity for Middle and High Schoolers

What is Dynamic Mindfulness?

Dynamic Mindfulness (DMind) is program that teaches stress resilience and s**ocial and emotional learning**. Each DMind class includes the key elements of mindful movement, breathing practices, and centering practices.

What are the Benefits to DMind?

- *DMind* can help you learn to deal with stress.
- *DMind* can help you to get along better with friends and family.
- *DMind* can give you skills to feel more confident in handling life challenges.
- *DMind* is completely free.
- *DMind* can be done from the comfort of your own home.

The Details:

What: 16, 45-minute live interactive zoom sessions to learn and practice new skills.

When: Monday March 1-Thursday March 25. All groups will occur in the afternoon, after school hours. More information on meeting times will be presented during project consent process.

What will I be asked to do?

All participants will be either randomly assigned to a control group or intervention group. All groups will be asked to complete a confidential survey online before the beginning of groups and again after the end of groups. Intervention group participants will also be asked to participate in the DMind program, online for 16 sessions via online zoom session.

Will I get paid for participation in this study?

Yes! Control group participants will earn up to $40 ($20 for pretest and $20 for posttest). Intervention participants will receive the same payment for pretests and posttests and can receive up to an additional $40 for participating in the groups!

How do I sign up and who do I contact for more information?

Toby M. Mills Email: millsto@umsystem.edu Phone: 573-200-0479

***Please sign up by February 24th at 5:00 PM**

Appendix E

DMind Online Group Project Satisfaction Survey

	Instructions: Please circle one answer for each question.	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
1	*DMind* taught me how to deal with stress.	1	2	3	4	5
2	*DMind* taught me how to build self-awareness.	1	2	3	4	5
3	*DMind* taught me how to manage my emotions.	1	2	3	4	5
4	*DMind* taught me how to build healthy relationships.	1	2	3	4	5
5	I felt safe during the *DMind* online groups.	1	2	3	4	5
6	I enjoyed the *DMind* groups.	1	2	3	4	5
7	The *DMind* groups were useful to me.	1	2	3	4	5
8	I plan to use the skills learned in the DMind groups in my life after the group has finished.	1	2	3	4	5
9	The *DMind* groups were taught in a kind and respectful way.	1	2	3	4	5
10	The *DMind* groups were easy to follow along with.	1	2	3	4	5
11	I felt valued and accepted by the DMind online **group leaders** in regards to my race and ethnicity.	1	2	3	4	5

12	I felt valued and accepted by the DMind online **group participants** in regards to my race and ethnicity.	1	2	3	4	5
13	The DMind online group leaders created an open and affirming environment for participants regardless of their sexual identity and gender orientation.	1	2	3	4	5

1. What parts of the DMind Online Group Project did you find most helpful?
2. What parts of the DMind Online Group Project did you find most enjoyable?
3. Were there any parts of the DMind Online Group Project that you did not find helpful?
4. Were there any parts of the DMind Online Group Project that you did not find enjoyable?
5. Did you experience any barriers or challenges in participating in the DMind Online Group Project? If so- what were they?
6. Is there anything that we could do to make participating in the DMind Online Group Project easier?

Appendix F

DMind Online Group Project Fidelity Checklist

DMind Fidelity Checklist

Session # _____

Session Date: _____

School: _____

Group Facilitator: _____

Form Completed By: _____

# of Student Participants: _____

DMind **Fidelity Checklist**	**Yes**	**No**
1. Group leader reviewed group expectations.		
2. Group leader read aloud the "activate background knowledge".		
3. Group leader asked activation question(s).		
4. Group leader facilitated opening bell and focused breathing.		
5. Group leader facilitated mindful movement.		
6. Group leader facilitated mindful breathing.		
7. Group leader facilitated guided meditation.		
8. Group leader rang closing bell.		
9. Group leader asked connection question.		
10. Group leader thanked students for participating.		
11. Group leader encouraged dialogue and interactions from participants.		
12. Group leader used audio prompt to quiet/calm participants as needed.		

On a scale from 1-5:	
1. How engaged were the group participants?	1 2 3 4 5
2. How enthusiastic were the group participants?	1 2 3 4 5
3. How well-behaved were the group participants?	1 2 3 4 5
4. How warmly did the group leader(s) respond to group participants?	1 2 3 4 5
5. How knowledgeable were the group leader(s) on session material?	1 2 3 4 5

Special Notes:

_____

Appendix G

DMind Online Group Project Session Protocol

Date:
Group Assignment:
Session #:
Group Facilitator:
Group Assistant:

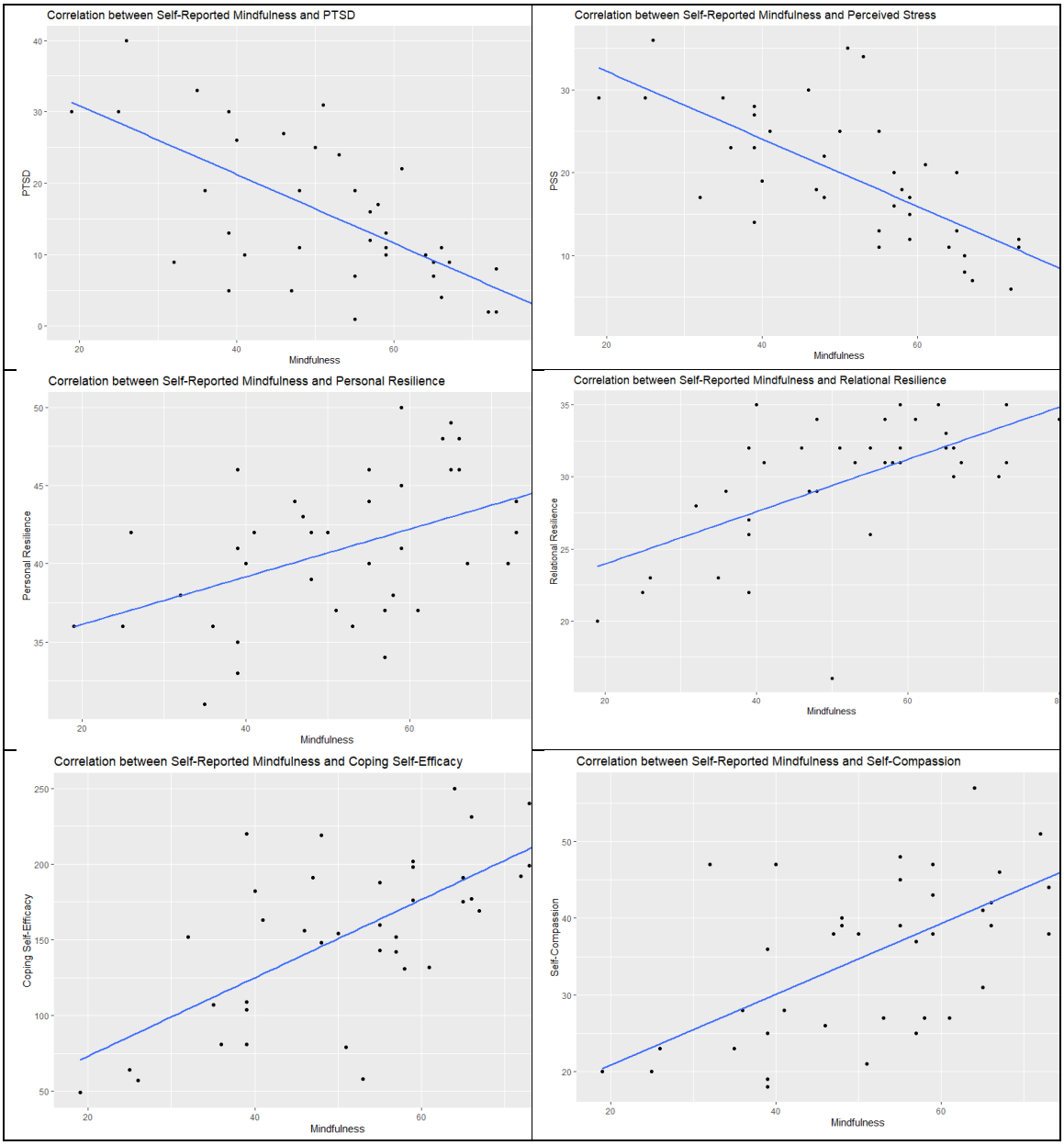
Group Facilitator	**Completed?**	**Group Assistant**	**Completed?**
Make group assistant a co-facilitator.	Yes No N/A	Manage waiting room and breakout rooms as appropriate	Yes No N/A
Reviewed group Agreements	Yes No N/A	Take Attendance	Yes No N/A
Completed all session components.	Yes No N/A	Completed Fidelity Checklist?	Yes No N/A
Thanked students for participating.	Yes No N/A	Complete Observational Forms?	Yes No N/A
Encouraged dialogue and interactions from participants.	Yes No N/A	Provide Behavioral Support?	Yes No N/A
Used audio prompt to quiet/calm participants as needed.	Yes No N/A		
Used presentation and Mindful Movement video as visual aid	Yes No N/A		
Address Safety Concerns	Yes No N/A	Address Safety Concerns	Yes No N/A

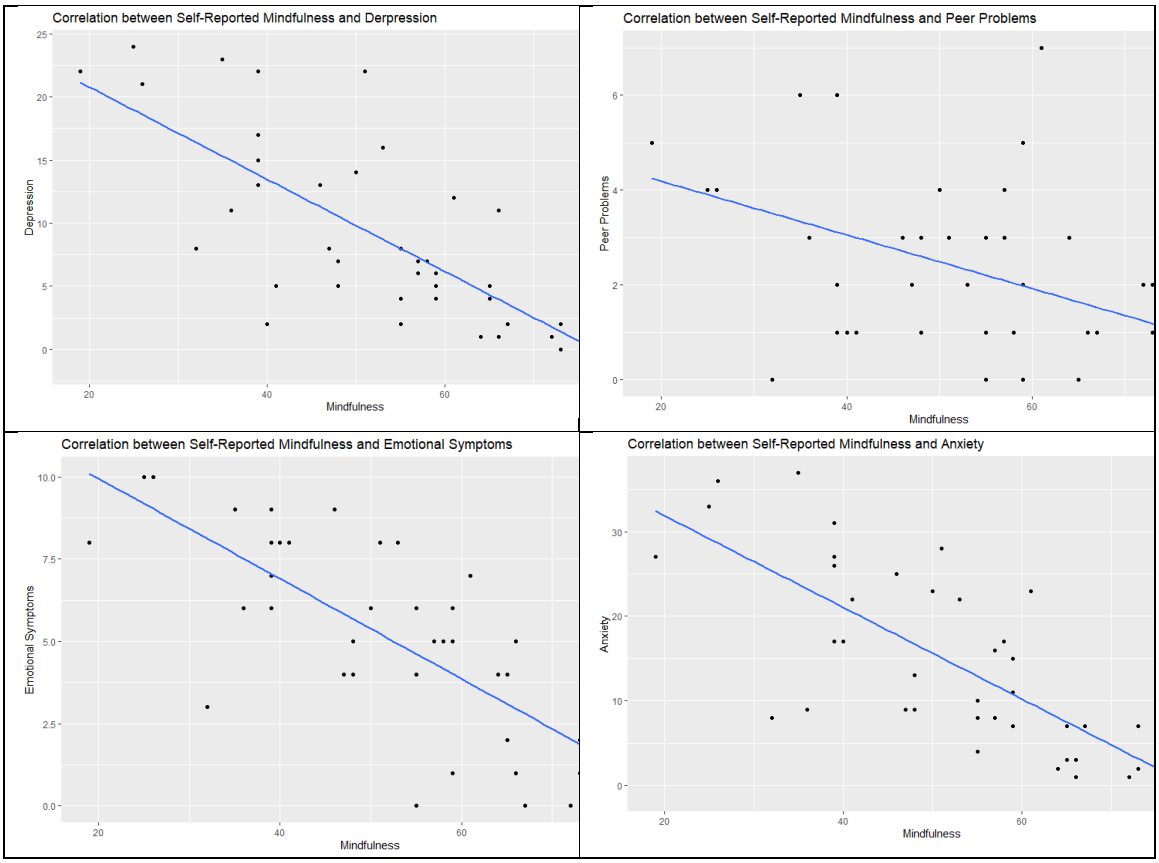
Please describe safety concerns (N/A if no safety concerns present):

Please describe steps taken to address safety concerns (N/A if no safety concerns present):

Appendix H

Table of Scatterplot Graphs for Correlations from Research Aim Three




Correlation between Self-Reported Mindfulness and Depression
Depression
Mindfulness
Correlation between Self-Reported Mindfulness and Peer Problems
Peer Problems
Mindfulness
Correlation between Self-Reported Mindfulness and Emotional Symptoms
Emotional Symptoms
Mindfulness
Correlation between Self-Reported Mindfulness and Anxiety
Anxiety
Mindfulness

VITA

Toby Mackenzie Mills was born June 13, 1980, in St. Louis Missouri. She attended elementary school in St. Louis Missouri and attended high school in St. Charles Missouri. She graduated from Francis Howell High School in May 1998. From 1998-2002, Toby attended the University of Missouri, Columbia and obtained her bachelor's degree in May 2002 with an Arts and Sciences Degree in Interdisciplinary Studies, with areas of focus in Psychology, Spanish and Marketing. In August of 2002, Toby moved to Albuquerque New Mexico, where she served as an AmeriCorps Volunteer for one year. From 2006-2009, Toby attended New Mexico Highlands University in a Master's in Social Work program and graduated with Honors in May 2009. Toby moved back to Missouri and started a family and in 2017, Toby began the PhD research program with the University of Missouri, Columbia, School of Social Work. Toby successfully defended her dissertation in May 2021 and graduated from her doctoral program with honors in August 2021.