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Wise Mind Program Evaluation

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WISE MIND PROGRAM EVALUATION

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ABSTRACT

Addressing adolescent mental health, especially among low-SES and racial-ethnic minority youth is imperative. This study evaluated the effectiveness and acceptability of a school-based socio-emotional learning program, called Wise Mind, delivered to a low-income, racially-ethnically diverse population. Participants (n=45 total; n = 25 intervention; n = 20 control) were ninth graders in both Special and General Education classes at a low-income racially-ethnically diverse high school in the Southwest United States. Eight one-hour sessions of Wise Mind were delivered to the intervention group over the course of eight weeks. Participants responded to questionnaires pre- and post- intervention assessing emotion regulation, mindfulness, interpersonal competence, and acceptability of the program. ANOVA, ANCOVA, descriptive statistics, and thematic analysis were used to analyze data. Quantitative results demonstrated no statistically significant differences pre- and post-intervention in the intervention group on outcome measures and no statistically significant differences between the control and intervention groups on outcome measures controlling for baseline scores. Qualitative results at post-intervention suggest that participants overall found the program at least somewhat effective and acceptable. Thematic analysis results included the importance of learning about mindfulness and emotion regulation, the applicability of skills to distressing or interpersonal situations, and the value of in-session engagement. Other insights gleaned from this study include ensuring cultural and contextual fit of future intervention and study methodology. Findings from this study expand our understanding of how to improve the DBT STEPS-A intervention, and SEL

programs more generally, when delivered to diverse populations, with the overall goal of promoting adolescents' socioemotional success and well-being.

TABLE OF CONTENTS

LIST OF TABLES

Introduction

Adolescence is a time of formative opportunities, challenges, and stressors. During this developmental stage, adolescents undergo changes physiologically, cognitively, and emotionally. They also learn to navigate social relationships, autonomy, and explore their identities (APA, 2021). Peer pressure, academics, socioeconomic stressors, employment, and decisions about the future are among the many challenges and opportunities with which adolescents are confronted. Additionally, adolescents' brains are still developing, undergoing myelinogenesis and maturation of the prefrontal cortex and limbic system, making them vulnerable to risk-taking behavior and impulsivity (Arain et al. 2013). This developmental period also coincides with an increase in risk for the onset for anxiety and depressive disorders (Lee et al., 2014)

Adolescent Mental Health

Overall, adolescents are facing an increasing number of mental health concerns (CDC, 2019), with one in seven adolescents experiencing a mental health disorder globally (WHO, 2022). Further, adolescents from racially-ethnically diverse backgrounds face unique difficulties. For example, Hispanic/Latino youth are particularly at risk for suicidal ideation and self-harm (Cervantes et al., 2014) and Native American youth are more likely than any other racial-ethnic group to die from suicide or substance use (IHS, 2019). Low socioeconomic background is also considered a risk factor for mental health concerns (Hudson, 2005; WHO, 2022). Living conditions, stigma, discrimination, and lack of access to quality support and services may contribute to this elevated risk (WHO, 2021). Additionally, stressors related to adverse school and neighborhood environments and parents' lack of socioeconomic resources may be contributing factors (Odgers & Adler, 2017).

Addressing adolescent mental health sets individuals up for improved physical and mental health, and the opportunity to lead fulfilling lives as adults (WHO, 2021). Adolescent mental health interventions may contribute to decreases in emotional and behavioral problems, functional

impairment, contact with law enforcement, and improvements socially and academically (NIHCM, 2005 as cited in Kutcher & Venn, 2008). Unfortunately, adolescents often do not access mental health interventions. Furthermore, children from low-income families and racial-ethnic minority backgrounds are less likely to receive mental health care (Ghandour et al., 2019; Katoaka, Zhang, & Wells, 2002). Preventative measures addressing mental health, especially among low-SES and racial-ethnic minority youth, may be particularly important in mitigating the effects of health disparities (Alegría et al., 2015).

One way to address adolescent mental health is through school-based interventions (Hoover & Bostic, 2021). Schools are "partner[s] to the mental health system" (Hoover & Bostic, 2021, p. 46), and school-based mental health interventions may be a means to make mental health interventions more accessible (Rones & Hoagwood, 2000).

School-based Interventions

A range of school-based interventions have been delivered to target a variety of concerns including depression, body image, eating disorders, anxiety, mental illness, substance use, and mental health literacy (Calear & Christensen, 2010; D'Amico & Edelen, 2007; Pinto-Foltz, Logsdon, & Myers, 2011; Richardson & Paxton, 2010; Sharpe et al., 2013; Wilksch & Wade, 2009). School-based interventions, such as universal Socioemotional Learning Programs (SEL), have also been employed to target socioemotional functioning more broadly.

Socioemotional Learning Programs

School-based universal Social and Emotional Learning (SEL) programs are designed to aid students in the development of five skill areas: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. (Collaborative for Academic, Social, and Emotional Learning, 2022). A meta-analysis of 213 school-based, universal SEL programs involving 270,034 kindergarten through high school students demonstrated that SEL programs improved SEL skills, attitudes, prosocial behavior, and decreased conduct problems and emotional distress.

Additionally, academic performance was improved following the interventions (Durlak et al., 2011). Numerous types of SEL programs are in existence (Newman, Dusenbury, & Bosworth, 2015). One such program is Dialectical Behavior Therapy Skills Training for Emotional Problem Solving for Adolescents (DBT STEPS-A; Mazza et al., 2016).

DBT-A and DBT STEPS-A

Dialectical Behavior Therapy (DBT) was originally designed by Marsha Linehan for individuals with borderline personality disorder. It is a skills-based, practical approach based on behavioral principles, dialectical philosophy, and biosocial theory of emotion dysregulation. Originally designed as a comprehensive, multimodal treatment for adult populations, it has now been adapted for a variety of conditions and populations (Linehan, 1991), including adolescent populations and as stand-alone skills training (Katz et al., 2004; McDonell et al., 2010; Rathus & Miller, 2002; Salbach-Andrae et al., 2008; Wasser et al., 2008).

DBT for Adolescents (DBT-A; Rathus & Miller, 2015) is an adapted DBT protocol for at-risk adolescents. DBT-A has been used to treat adolescents with non-suicidal self-injury, suicidality, borderline personality disorder symptoms, trauma symptoms, and emotion dysregulation (Berk et al. 2020; Fleischhaker et al., 2011; Geddes, Dziurawiec & Lee, 2013).

DBT Skills Training for Emotional Problem Solving for Adolescents (DBT STEPS-A; Mazza et al., 2016) is an adaptation of DBT-A for use in the school setting as a universal SEL program. The goal of DBT STEPS-A is to teach problem-solving and coping skills to adolescents to help them "navigate difficult situations at home, school, or with peers." The program is designed for middle and high school students. Traditionally, DBT STEPS-A curriculum is designed to be delivered as thirty 50-minute sessions once per week. The authors acknowledge that that this may not be feasible in all environments, thus the format of delivery is flexible (Mazza et al., 2016). DBT STEPS-A curriculum is structured around four modules or domains representing areas with which adolescents experience difficulty: Mindfulness, Distress Tolerance, Emotion Regulation, and Interpersonal Effectiveness.

Within each module are skills designed to address socio-emotional problems, manage emotions, and/or navigate challenging situations and decision-making.

School-based DBT Skills Groups

DBT-based skills groups have been delivered in school settings from middle school to college. School-based DBT-based skills groups have been shown to be feasible and acceptable, effective at reducing problems such as aggression and depression (Day, Smith, Short, & Bater, 2021), and associated with decrease in peer problems and increase in prosocial behaviors (Gasol et al. 2022). In college nursing students, participation in DBT skills groups were associated with significant decrease in stress and increases in mindfulness, self-compassion and resilience (Beanlands et al, 2019). In other college samples (Uliaszek et al., 2016; Ustundag-Budak et al., 2019) participation in DBT skills groups yielded reductions in depression, anxiety, and BPD symptoms, dysfunctional coping, and treatment drop out. In a sample of middle schoolers receiving a 9-week DBT skills group program (Zapolski & Smith, 2017), preliminary evidence suggested decreased intention to engage in risky behaviors due to positive and negative mood.

Burckhardt and colleagues (2017) examined the feasibility, acceptability, and effectiveness of a DBT skills group for 10th graders at an all-female school (n=96) in Australia. The groups, facilitated by a clinical psychologist, were comprised of six 50-minute sessions. Results indicated that there were no statistically significant differences between the treatment and control conditions post-intervention and 6-month follow up on quantitative measures of emotional regulation, depression, anxiety, and anger. Small improvements at post-intervention were found in the control group compared to the DBT group on impulsivity, awareness, depression, anxiety, and anger. Small improvements were noted at 6-month follow-up on goals in the control group and depression and anger in the DBT group. Despite this, results from qualitative analyses indicate that participants in the DBT condition experienced positive benefits (e.g., “it helped them regulate their emotions or that they

were getting less angry.") Regarding acceptability, a common theme among participants was that they would have liked more interactivity and more information about mental health issues.

A pilot study conducted by Flynn et al. (2018) explored the effectiveness of an adapted 22-week DBT STEPS-A program for the Irish school setting using a treatment and matched control group (n=72). Participants were females aged 15-16 from the general school populations in two urban and rural locations. The DBT STEPS-A intervention was delivered by trained teachers in the classroom setting. Results demonstrated significant improvements on the Emotion Symptom Index and Internalizing Problems, measured by the Second Edition of Behaviour Assessment System for Children (BASC-2; Reynolds & Kamphaus, 2004). Improvements in Dysfunctional Coping and DBT Skills Use were not found. The researchers posit that the measures used to detect changes in these constructs are not sensitive enough for a non-clinical sample.

Existing Research on DBT Skills Groups in Low-Income School Settings

A search of the literature revealed a limited number of studies examining school-based DBT skills groups among low-income, diverse adolescent populations in the United States. Martinez et al. (2021) evaluated the effects of DBT STEPS-A on ninth grade students delivered by school counselors as part of a universal SEL program using a quasi-experimental design (n=94) in rural southeastern United States. Fifty-two percent of participants in the treatment group were White. Results demonstrated, 24% were Black, and 24% were Latinx. Sixty-seven percent of the treatment condition identified as female. For students participating in DBT STEPS-A, improvements in self-reported social resiliency and reduction in difficulties with emotion regulation were found. Notably, the authors found a treatment effect for understanding and acceptance of DBT skills, however most of the variance in student scores related to these variables was associated with individual level variables such as gender and ethnicity. Given this finding, the authors highlight the importance of considering the cultural, ethnic, and gender identities from which students come, and tailoring SEL programs to the needs of individuals.

Chugani and colleagues (2021) explored the acceptability and feasibility of an adapted DBT STEPS-A intervention delivered to a non-clinical sample in a low-income high school in southwestern Pennsylvania. The intervention was delivered to students by health education teachers who received a three-day training in DBT STEPS-A and co-teachers fully trained in DBT. The researchers gathered information from stakeholders (health teachers, co-teachers, staff, and administrators) pre- and post-implementation on the acceptability and feasibility of the program. Students participating in the DBT STEPS-A intervention were not asked to provide data. Results indicated that DBT STEPS-A was adequately acceptable, appropriate, and feasible according to stakeholders immediately after training, however these ratings dropped post-implementation. These authors hypothesize that the training provided to the stakeholders was not adequate, contributing to the stakeholders struggling to deliver the program. These authors also speculate that the program may not have adequately met the needs of the specific population to whom it was delivered. They suggest the possibility of adaptation to meet the needs of a low SES, racially-ethnically diverse population.

Zapolski et al., (2021) are in the process of evaluating the implementation of an adapted DBT-A curriculum at two high schools comprised of a diverse, low-income student population. The participants in the study are also considered "at risk" (identified by school staff as such based on prior school-related conduct problems, risky health behaviors, conflicts, etc.). Students attend nine weekly sessions during school hours facilitated by graduate students and undergraduate student cofacilitators. Using a quasi-experimental design, the researchers intend to examine whether there are significant increases in core DBT-A skills post -intervention compared to baseline among the intervention group. Other outcomes assessed will include use of substances, likelihood of substance use, and risky health behaviors. As this study is ongoing, outcome data are not available.

Rationale for the Current Study

"Wise Mind" is an in-school SEL program based on DBT-A and DBT STEPS-A manuals. Wise Mind has been delivered as a school-based universal SEL program to students throughout the

Albuquerque Public School System (APS) for approximately seven years by University of New Mexico (UNM) Clinical Psychology doctoral students.

While DBT-A and DBT STEPS-A are evidence-based interventions, only a handful of prior studies have evaluated these interventions among lower income and racially-ethnically diverse adolescent populations (Chugani et al., 2021; Martinez et al., 2021; Zapolski et al., 2021) such as those within APS. Furthermore, while the Wise Mind program has been delivered to students for a number of years, there has yet to be a research study evaluating the effectiveness or acceptability of the program. The limited number of previous studies on DBT-A and DBT STEPS-A, and lack of research on the Wise Mind intervention specifically, pointed to the need to conduct this study.

To evaluate the effectiveness and acceptability of the Wise Mind intervention, a program evaluation was developed using a quasi-experimental design. The objectives of this research were to (1) help determine if, and in what ways, Wise Mind is beneficial to the students (2) provide insight into areas that need to be improved (including content, delivery, and cultural/contextual fit) (3) allow students to voice their opinion (4) help identify and better understand additional needs and challenges of adolescents in the community and (5) learn how Wise Mind can be best implemented throughout APS.

The following hypotheses were proposed. First, Wise Mind would yield improvements on measures of mindfulness, interpersonal competence, and emotion regulation from pre- to post-implementation for those receiving the program. Second, students receiving the Wise Mind program would have superior scores on measures of mindfulness, interpersonal competence, and emotion regulation compared to students not receiving the program, controlling for baseline scores. This study also had an exploratory aim of evaluating the acceptability of the program.

Method

Intervention

The intervention consisted of a skills-based socioemotional learning program, Wise Mind. Structured around DBT-A and DBT STEPS-A manuals, Wise Mind teaches adolescents a variety of coping skills in areas with which adolescents typically struggle (mindfulness, distress tolerance, interpersonal effectiveness, emotion regulation, and dialectical thinking).

The program was offered to high school students at a local APS high school and took place during Health or Physical Education (PE) Classes. The class met in person once per week for about 50 minutes. Eight sessions were delivered based on the availability of the high school students and facilitators.

Two sessions were spent on modules Mindfulness, Distress Tolerance, and Interpersonal Effectiveness. Only one session could be devoted to Emotion Regulation because of an unexpected session cancellation. Each session was structured around a particular DBT STEPS-A skill within that week's module. Skills were chosen in part based on prior delivery of Wise Mind- what students seemed to respond to well the past- as well as what made sense in terms of the most essential skills for each module.. Sessions commenced with a "roses and thorns" activity, during which students anonymously shared positive things ("roses") and challenges ("thorns") they were experiencing in their lives. Students wrote down their roses and thorns on sticky notes (no names), and facilitators collected them and read them aloud. A brief discussion followed this activity. Next, students were invited to participate in a group mindfulness activity. This included mindful breathing, guided meditation, progressive muscle relaxation, or a mindfulness game. Following the mindfulness activity, students were given the opportunity to process their experience and give feedback on how they liked or disliked the activity. Next, a brief review of the previous week's DBT skill was presented, followed by a presentation of the new DBT skill for the week. Group activities and opportunities for participation were offered throughout the teaching of the new skill. Candy was offered as an incentive

for students who participated during the sessions. The Wise Mind session concluded with processing and eliciting feedback from students about their thoughts on the day's lesson.

The control group consisted of two PE classes taught by their regular PE teacher. In these classes, students played sports and engaged in group physical activities.

Interventionists

Four UNM Clinical Psychology Ph.D. students facilitated the sessions in groups of two. Each facilitator had two classes each and each session was facilitated by the same pair of facilitators each week. Students were trained by other facilitators and a licensed clinical psychologist. Reading and discussion of the DBT-A and DBT STEPS-A manuals were also part of the training. Facilitators received weekly supervision from a licensed clinical psychologist.

Participants and design

In Spring 2022, teachers were contacted about their interest in having their students participate in Wise Mind for Fall 2022. The participating school is a public high school located in Albuquerque, New Mexico. It is a Title 1 School, with most of its students coming from disadvantaged backgrounds (APS, 2023).

Two teachers of ninth graders responded with interest in their students participating during class time, for a total of four participating classes. Additionally, teachers were asked if they would be interested in allowing the researcher to evaluate the intervention. Teachers were also asked if their other classes could serve as the control group. One teacher responded positively, stating that two of their Physical Education classes could participate as the control group. Students in PE classes participated in sports and games.

It was learned on day one of the intervention that three of the four classes receiving Wise Mind were enrolled in the Special Education Program. Students in the Special Education Program have challenges related to Attention Deficit and Hyperactivity Disorder (ADHD), Autism Spectrum Disorder (ASD), Intellectual Disability (ID), Learning Disability, among others.

All students in the participating classes were invited to participate in the study. Guardian opt-out forms were sent home with students in the intervention and control group a week prior to obtaining assent from students, giving guardians the chance to read the forms and opt out of their student participating in the study, by contacting the researcher. No guardians opted out of their students participating in the study. After giving parents a week to opt-out, students were given assent forms, which were read aloud and explained by the researcher. Students who agreed to participate in the study checked a box on the first page of the assent form, indicating their assent. As this study received a waiver of documentation of consent/assent, signatures were not collected on the form. One-hundred eleven students assented to participate in the study. Fifty students participated in the Wise Mind intervention.

The UNM Institutional Review Board (IRB) approved this study on June 29, 2022. The Albuquerque Public School Research Review Board approved this study on August 8, 2022.

Procedure

Outcomes were measured using questionnaires administered at baseline and post-intervention (one week after the final Wise Mind session). All questionnaires were administered in class using pencil/pen and paper and took between 40-50 minutes to complete. Facilitators read the questionnaire items aloud to participants and were available to answer students' questions as needed. Questionnaires were identical at each time point with the exception of the demographics questionnaire and a researcher-devised effectiveness and acceptability questionnaire. Students did not include their names or personally identifying information on the questionnaires. In order to link pre- and post- questionnaires, students were asked to write their or their parents' phone number on their questionnaire packets at each time point. The demographics questionnaire was administered only at baseline and the control group was not asked to complete the researcher-devised effectiveness and acceptability questionnaire. Students were provided with a small incentive (a small bag of assorted candy) for their participation in the study.

Measures

Demographics

A demographics questionnaire gathered information such as age, race/ethnicity, gender identity, grade in school, zip code, parental education status, etc.

Interpersonal Effectiveness

Interpersonal Competence Questionnaire- Managing Interpersonal Conflicts subscale (ICQ; Buhrmester et al., 1988). Interpersonal competence involves social skills that result in effective communication. This construct maps onto the Interpersonal Effectiveness domain of DBT- A and DBT STEPS- A, which teaches specific relationship skills to build and maintain positive relationships (Rathus & Miller, 2014). The ICQ Managing Interpersonal Conflicts subscale is an 8-item scale assessing competence in the domain of managing interpersonal conflicts. Respondents are asked to rate their competence in handling interpersonal situations on a 5-point Likert scale (1= "I'm poor at this" to 5= "I'm extremely good at this"). An example item is, *"When having a conflict with a close companion, really listening to his or her complaints without trying to "read" his/her mind."* In previous research, subscale Cronbach alphas are satisfactory, ranging from .77 to .87 (mean = .83). Test-retest reliabilities are high for conflict management, r =.69. (Buhrmester et al., 1988). In this study, internal reliability was good (α = .812)

Mindfulness

Mindfulness Attention Awareness Scale-Adolescent (MAAS-A; Brown et al., 2011). The MAAS-A is a 14-item scale assessing mindfulness, specifically the open or receptive awareness of and attention to what is taking place in the present. This measure was administered to participants to tap into the DBT STEP-A construct, mindfulness, which refers to "nonjudgmental awareness of present experiences" and consists of full awareness and attentional control. Respondents are asked to rate their responses on a 6-point scale ranging from (1 = "almost always" to 6 "almost never"), with higher scores indicating higher trait mindfulness. An example item is *"I could be experiencing some*

emotion and not be conscious of it until sometime later." The MAAS-A has been validated with adolescents and has high internal consistency (Cronbach's alpha = .82). Test-retest agreement was .79. (Brown, Biegel, & Loverich, 2011). In this study, internal consistency was good (α=.888)

Emotion Regulation

Difficulties in Emotion Regulation Scale-18 (DERS-18; Victor & Klonsky, 2016). The DERS-18 was administered to participants to assess emotion regulation. The DERS-18 is an 18-item questionnaire that assesses typical levels of difficulty in emotion regulation. Participants are asked how often the items apply to them on a scale of 1 ("almost never") to 5 ("almost always"). An example item is, *"When I am upset, I become out of control."* Six subscales include Awareness, Clarity, Goals, Impulse, Nonacceptance, and Strategies. Higher global or subscale scores indicate greater difficulty with emotion regulation. In previous research, DERS-18 has very high internal consistency with subscale alphas ranging from .77 (Awareness) to .90 (Goals and Impulse), and an overall alpha of .91. When tested with adolescent samples, internal consistencies for the subscales were good to excellent (alphas ranged from .76 to .89) (Weinberg & Klonsky, 2009). In this study, internal reliability was good (α=.868). The DERS has also been administered in other DBT STEPS-A research (Martinez et al., 2021).

Acceptability

A 30-item acceptability questionnaire was devised based on Sekhon, Cartwright, and Francis' Acceptability Theoretical Framework (2017) and administered to participants in the intervention group at the conclusion of Wise Mind. Five domains were incorporated in the current researcher-devised acceptability questionnaire, including affective attitude, perceived effectiveness, intervention coherence, self-efficacy, and ethicality. A sample open-ended question was, *"What skills did you learn during the Wise Mind groups?"* A sample closed-ended question asked participants to rate on a scale of 1 (did not help at all) to 7 (very helpful) how Wise Mind helped refrain from acting impulsively when faced with a crisis. Another question asked students to consider how effective the

program was at meeting the goal of teaching practical problem solving and coping skills. The acceptability questionnaire's internal reliability was good (α=.863). Other open-ended questions asked about what could be done to improve Wise Mind in the future, what the participants most liked/least liked about Wise Mind, and their favorite skills learned.

Data Analysis Plan

Preliminary analyses included descriptive statistics and testing for group differences using t-tests and chi-square tests. T-tests were used to test for differences between scores pre- and post-intervention in the control and intervention groups, respectively. A series of One-way Analyses of Covariance were used to test for changes in outcome measures post- intervention for both groups controlling for baseline scores.

Frequencies and descriptives were used to analyze closed-ended responses on the acceptability questionnaire to explore the acceptability of the intervention. Open-ended responses from the acceptability questionnaire were coded by a team of trained research assistants using the thematic analysis process outlined by Braun & Clarke (2006). Frequencies were run to determine the most prevalent themes in the data. Data were analyzed using SPSS v. 28.0.1 and Jamovi 2.

Results

Preliminary Analyses

One hundred eleven students agreed to participate in the study. In the control group, 62 participants completed the questionnaires at baseline and 43 at follow up. Of those, 20 completed questionnaires at both time points. In the intervention group, 47 participants completed the questionnaires at baseline and 49 post-intervention. Of those, 26 participants completed questionnaires at both time points. The final analysis included data from 45 participants due to attrition and missing data. Of this final sample, 25 students were in the intervention group and 20 were in the control group. Mean imputation was used to handle remaining missing data relevant to

outcome measures. Qualitative analyses (thematic analysis) included data from 47 participants in the intervention group.

Frequencies and descriptives were run to determine if group differences existed among the control and intervention groups on demographic characteristics. The intervention group consisted of more males than females or other gender compared to the control group, however these differences were not statistically significant ($X^2(3, N=45) = 4.26$, $p = .23$). While both the control and intervention group were similarly diverse in terms of race and ethnicity, the intervention group had more participants who identified as Hispanic/Latino. This difference was not statistically significant ($X^2(3, N=45) = 2.59$, $p = .46$). The demographic characteristics of the sample are shown in Table 1.

Table 1. ***Demographic Characteristics by Group***

Variable	Control Group	Intervention Group	Total Sample
Age (mean(SD))	14.1(.307)	14.4 (.746)	14.27 (.59)
Male	11 (37.9%)	18 (62.1%)	29 (64.4%)
Female	6 (46.2%)	7 (53.8%)	13 (28.9%)
Other gender	3 (100%)	0 (0%)	3 (6.6%)
Hispanic/Latino	4 (20%)	12 (48%)	16 (35.6%)
Multiple race/ethnic identities	5 (25%)	7 (28%)	12 (26.7%)
White	7 (35%)	5 (20%)	12 (26.7%)
Asian	2 (10%)	0	2 (4.4%)
Native American	1 (5%)	1 (4%)	2 (4.4%)
Black	1 (5%)	0	1 (2.2%)

Additionally, Chi Square analyses were run to determine if differences existed within the intervention group based on Special Education versus General Education classes. Gender differed significantly between the Special Education and General Education classes, with more males being in the Special Education group ($X^2(1, N=25) = 10.43$, $p = .001$). Intervention group differences are shown in Table 2.

Table 2. ***Demographic Characteristics for Typical Education and Special Education***

Variable	General Education	Special Education
Age (mean(SD))	14.3 (.5)	14.5 (.9)
Male	3 (33.3%)	15 (93.8%)
Female	6 (66.7%)	1 (6.3%)
Hispanic/Latino	4 (44.4%)	8 (50%)
White	2 (22.2%)	3 (18.8%)
Multiple race/ethnic identities	3 (33.3%)	4 (25%)
Native American	0 (0%)	1(6.3%)

Finally, a series of independent samples t-tests were performed to assess differences between the groups at baseline on outcome measures. No statistically significant differences emerged. Baseline scores are shown in Table 3.

Table 3. ***Outcome Measures at Baseline by Group***

Outcome	Control Mean (SD)	Intervention Mean (SD)	Difference	Effect size (Hedge's *g*)
ICQ	26.56 (6.67)	24.76 (4.758)	t(43) = -1.079, p =.287	-.318
MAAS	3.39 (1.149)	3.37 (0.867)	t(43) = -.08, p = .938	-.024
DERS Total Score	42.99 (14.644)	42.97 (10.024)	t(32.2) = -.006, p= .995	-.002
DERS Aware	9.13 (2.651)	9.65 (2.779)	t(43) = .653, p = .517	.193
DERS Clarity	7.50 (3.025)	7.40 (2.328)	t(43) = -.122, p = .903	-.036
DERS Goals	7.30 (3.257)	8.14 (3.663)	t(43) = .825, p = .414	.243
DERS Impulse	5.20 (2.909)	5.34 (2.714)	t(43) = .17, p = .866	.05
DERS Non-Accept	7.72 (4.160)	6.74 (3.106)	t(34.2) = -.899, p = .375	-.274
DERS Strategies	6.14 (2.955)	5.69 (3.396)	t(43) = -.575, p =.568	-.169

Descriptive statistics were run to explore the differences in scores pre-and post-intervention on outcome measures within the intervention group based on Special Education versus General Education affiliation. On the ICQ, the mean score for the Special Education group was slightly higher than the General Education group. Post-intervention, the mean

score for the Special Education group decreased and the mean score for the General Education group increased. At baseline, the Special Education group scored higher on the DERS Total Score versus the General Education Group. At post-intervention, the General Education group had improved scores and the Special Education group worse scores. On all DERS Subscales, except for DERS Impulsivity, the General Education group had worse scores at baseline than did the Special Education group. In the Special Education group, mean scores on all DERS subscale scores worsened post-intervention. In the General Education group, the mean scores on DERS Subscales Awareness and Clarity worsened and mean scores on subscales Goals, Impulsivity, Non-Acceptance, and Strategies improved. See Table 4 for descriptives.

Table 4. ***Intervention Group Outcome Measure Descriptives***

Outcome Measure	General Ed. (n =20)		Special Ed. (n =25)	
	Baseline Mean (SD)	Post Mean (SD)	Baseline Mean (SD	Post Mean (SD)
ICQ	24.11 (3.06)	24.89(4.51)	25.07(5.69)	24.13(4.18)
MAAS	3.95(.83)	3.45(.78)	3.04(.76)	3.32(.576)
DERS Total Score	47.05(13.09)	46.31(11.22)	40.68(7.8)	43.05(10.72)
DERS Aware	9.69(2.52)	10.44(1.59)	9.65(3.08)	9.76(2.33)
DERS Clarity	8.00(2.45)	8.44(2.74)	7.06(2.35)	7.33(2.81)
DERS Goals	9.67(3.81)	9(3.61)	7.31(3.54)	7.81(3.6)
DERS Impulse	5.00(2.35)	4.11(1.27)	5.54(3.04)	5.6(2.41)
DERS Non-Accept	7.56(4.25)	7.22(5.22)	6.25(2.41)	6.34(3.45)
DERS Strategies	7.13(3.24)	7.08(2.98)	4.87(1.42)	6.21(3.12)

Hypothesis One

The first hypothesis was that Wise Mind would be effective at improving mindfulness, interpersonal competence, and emotion regulation from pre- to post- intervention in those receiving the intervention. Participants scores on the DERS (Emotion Regulation) Subscales of Impulsivity,

Non-Acceptance, and Strategies improved slightly, but not to a level that reached statistical significance. Participants' scores remained stable on the MAAS (Mindfulness) and worsened slightly on the ICQ (Interpersonal Competence), DERS Total Score, and DERS Subscales Awareness, Clarity, and Goals. A series of three t-tests revealed no statistically significant changes from pre- to post- intervention on outcome measures of mindfulness, $t(25) = 0.012$, $p = 0.495$, interpersonal competence, $t(25) = 0.455$, $p = 0.326$, and emotion regulation overall, $t(25) = -0.69$, $p = 0.248$. The results of these analyses are shown in Table 5.

Table 5. ***Intervention Group Outcomes***

Outcome Measure	Baseline Mean (SD)	Post-Intervention Mean (SD)	Difference	Effect size (Hedge's *g*)
ICQ	24.76 (4.758)	24.41 (4.138)	$t(25) = .46$, $p = .65$	-.076
MAAS	3.37 (0.867)	3.37 (0.738)	$t(25) = .01$, $p = .99$	-.002
DERS Total Score	42.97 (10.024)	44.24 (10.57)	$t(25) = -.69$ $p = .50$	-.121
DERS Aware	9.65 (2.779)	9.98 (2.049)	$t(25) = -.68$, $p = .50$	-.13
DERS Clarity	7.40 (2.328)	7.74 (2.727)	$t(25) = -.63$, $p = .54$	-.13
DERS Goals	8.14 (3.663)	8.24 (3.502)	$t(25) = -.15$, $p = .89$	-.026
DERS Impulse	5.34 (2.714)	5.08 (2.124)	$t(25) = .59$, $p = .56$	.103
DERS Non-Accept	6.74 (3.106)	6.67 (4.002)	$t(25) = .12$, $p = .91$	.017
DERS Strategies	5.69 (3.369)	6.52 (2.972)	$t(25) = -1.4$, $p = .18$	-.302

Hypothesis Two

The second hypothesis was that students receiving the Wise Mind intervention would have superior scores on outcome measures compared to the control group, controlling for baseline scores. Results from the One-way ANCOVAs yielded no statistically significant differences between the control and intervention groups controlling for baseline scores. The results of these analyses are shown in Table 6.

Table 6. ***Results of One-Way Analysis of Covariance***

Outcome Measure	Control group (n =20)	Intervention group (n =25)	Test of Between Subjects Effects	Partial η^2

	Baseline Mean (SD)	Post Mean (SD)	Baseline Mean (SD	Post Mean (SD)		
ICQ	26.56 (6.67)	25.02 (5.72)	24.76 (4.758)	24.41 (4.138)	$F(1, 42) = 1.81$, p =.673	.47
MAAS	3.39 (1.149)	3.48 (1.334)	3.37 (0.867)	3.37 (0.738)	$F(1, 42) = .20$, p = .66	.50
DERS Total Score	42.99 (14.644)	45.26 (14.847)	42.97 (10.024)	44.24 (10.57)	$F(1, 42) = .16$, p= .69	.56
DERS Aware	9.13 (2.651)	8.51 (2.933)	9.65 (2.779)	9.98 (2.049)	$F(1, 42) = 4.22$, p = .05	.006
DERS Clarity	7.50 (3.025)	8.12 (3.733)	7.40 (2.328)	7.74 (2.727)	$F(1, 42) = .17$, p = .68	.30
DERS Goals	7.30 (3.257)	8.31 (3.317)	8.14 (3.663)	8.24 (3.502)	$F(1, 42) = .46$, p = .52	.33
DERS Impulse	5.20 (2.909)	6.15 (3.301)	5.34 (2.714)	5.08 (2.124)	$F(1, 42) = 3.79$, p = .06	.46
DERS Non-Accept	7.72 (4.160)	7.63 (4.066)	6.74 (3.106)	6.67 (4.002)	$F(1, 42) = .01$, p = .93	.65
DERS Strategies	6.14 (2.955)	6.53 (3.597)	5.69 (3.396)	6.52 (2.972)	$F(1, 42) = .19$, p =.67	.37

Exploratory Aim

This study also had an exploratory aim of evaluating the acceptability of the program. Overall, participants reported a mean of 3.93 (SD = .984) on the 11-item researcher devised questionnaire asking about perceived effectiveness of the intervention on a scale of 1 (did not help at all) to 7 (very helpful).

Participants' mean enjoyment of Wise Mind on a scale of 1 (did not enjoy at all) to 7 (enjoyed very much) was 4.625 (SD = 1.486). Overall, participants receiving the Wise Mind intervention rated their acceptability 4.601 (SD = .0939) on a scale of 1 (not satisfied) to 7 (very satisfied) (α = .768).

Participants viewed the intervention as relevant to their age group (52%) followed by somewhat relevant (44%); relevant to them as individuals (45.8%) followed by somewhat (41.7%); and relevant to their cultural group (50%) followed by somewhat relevant (50%). Fifty-two percent of participants reported that the material was somewhat sensitive to diversity and culture. Participants' favorite skills learned were Mindfulness (84%) followed by Interpersonal Effectiveness (8%). Participants' perceived effectiveness and acceptability are shown in Tables 7 and 8.

Table 7. ***Perceived Effectiveness and Acceptability***

Variable	*M (SD)*	*Mdn*	*Range*
Perceived Effectiveness	3.93 (.98)	3.81	2.18- 6.0
Enjoyment	4.63 (1.49)	4.5	2- 7
Acceptability	4.60 (.09)	4.5	3.14- 7

Table 8. ***Acceptability Ratings***

Component of Acceptability	N (%)
Relevance of Wise Mind to Participants' Age Group	
Yes	13 (52%)
Somewhat	11 (44)
No	1 (4)
Relevance of Wise Mind to Participants as Individuals	
Yes	11 (45.8%)
Somewhat	10 (41.7%)
No	3 (12.5%)
Relevance of Wise Mind to Participants' Cultures	
Yes	12 (50%)
Somewhat	12 (50%)
Favorite Skills Learned	
Mindfulness	21 (84%)
Interpersonal Effectiveness	2 (8%)
Emotion Regulation	1 (4%)
Distress Tolerance	1 (4%)

Thematic Analysis

To the seven open-ended questions on the acceptability questionnaire, responses varied from one word to one or two sentences. Participants' responses on the open-ended acceptability questionnaire were read and reviewed to develop initial codes. Upon development of a codebook, trained research assistants read through participants' responses to the eight open-ended questions and coded each response. Intercoder agreement ranged from 83.7 - 93.8% and discrepancies were resolved through consensus. Themes were developed based on the final coding of the data.

Skills learned.

The skills participants reported learning most about were related to emotions and emotion regulation and mindfulness.

"I learned about mindfulness and emotional regulation."
"How to be mindful."

Situations in which students could use skills learned.

Participants most often stated that they could use these skills when distressed or in interpersonal situations.

"When I get overwhelmed or mad."

"If I'm in an argument I can talk to them respectfully and try to understand the other person's side of the story."

"When you are talking to someone or how to calm down when upset."

Other skills students would have liked to learn about.

Despite reporting skills most learned pertained to emotions/emotion regulation and mindfulness, participants expressed they would have liked to learn more about emotions and mindfulness.

"More about expressing my emotions."

"How to handle my emotions."

"Mindfulness."

Most-liked aspect of Wise Mind.

Participants' most-liked aspect of Wise Mind was the activities, followed by not having to do classwork.

"I think the activities were great and everyone talking to each other."

"The fun games"

"We didn't have to do classwork."

Least-liked aspect of Wise Mind.

The question about the least-liked aspect of Wise Mind yielded a large variety of responses. Many participants reported not least-liking anything, although many participants reported least-liking the lack of engaging activities and having to sit and listen for a long time.

"Nothing. It was chill."

"Having to listen for a long time. I feel like there should be more activities."

"I hated to have to sit for so long and listen."

"Kind of everything it feels like therapy I don't really like therapy."

What could be done to improve Wise Mind in the future.

Additionally, when asked what could be done to improve Wise Mind in the future, most reported that they would like more activities.

"Add more fun activities."

"More games."

What could facilitators do better to accomplish the goals of Wise Mind.

When asked what facilitators could do better, most reported either nothing or don't know, followed by more activities.

"I think y'all did an amazing job. No changes needed."

"To be honest I don't know I'm sorry man."

"More activities."

Discussion

This study evaluated the effectiveness and acceptability of Wise Mind, a Universal SEL program based on DBT-A and DBT-STEPS-A manuals delivered to a low-income, racially-ethnically diverse high school sample in Albuquerque, NM. Employing a quasi-experimental, mixed-methods design, the following hypotheses were tested. First, Wise Mind would be effective at improving mindfulness, interpersonal competence, and emotion regulation from pre- to post- implementation for those receiving the program. Second, students receiving the Wise Mind intervention would have superior scores on outcome measures compared to the control group, controlling for baseline scores. An additional, exploratory aim of the study was to evaluate the acceptability of the intervention. Eight sessions of Wise Mind were delivered to students in the intervention group, while the control group attended their usual Physical Education class. Questionnaires were administered to students prior to session one of Wise Mind and one week after the final Wise Mind session.

Hypothesis One

Quantitative analyses indicated no statistically significant changes from pre- to post-intervention in the intervention group on outcome measures of mindfulness, interpersonal competence, and emotion regulation overall. Slight non-statistically significant improvements were found on DERS (Emotion Regulation) Subscales of Impulsivity, Non-Acceptance, and Strategies. Slight, non-statistically significant worsening of scores were found on the ICQ (Interpersonal Competence), DERS Total Score, and DERS Subscales of Awareness, Clarity, and Goals. Participants' scores on the MAAS (Mindfulness) were unchanged. This is a surprising finding given the emphasis on mindfulness across sessions.

Possible explanations for these findings are abundant. First, it is conceivable that participants experienced a phenomenon known as "response shift," in which participants undergo a change in perspective that modifies how they evaluate a construct (Cella, Hahn, Jansen et al., 2015, as cited in Chang et al., 2018). This can happen when participants gain new insight about material being taught. It is possible that, through learning about the DBT STEPS-A skills, students changed the way they

understood the constructs being measured from pre- to post- intervention, how they assigned value to these constructs, and/or how effectively they perceived using skills. Burckhardt et al. (2017) also proposed this as an explanation for their findings.

Second, it is possible that the intervention was too brief for students to have gained skills to a degree that could be captured by the outcome measures. While full DBT STEPS-A curriculum is designed to be delivered as 30 50-minute sessions, students in this study received only eight sessions. Another explanation for these findings is that, due to limited sample size in the chosen design, the statistics were underpowered.

These lack of statistically significant results pre-post intervention are consistent with research conducted by Panish (2021) who studied a DBT STEPS-A pilot program in an urban school context. In addition to an underpowered sample, Panish proposed possible lack of cultural specificity as a factor in the lack of statistically significant results. This could be a factor in this current study as the sample was racially and ethnically diverse. It is possible that there could have been a lack of fit between the intervention and the student population, or the questionnaires and the respondents. Furthermore, the nature of the quantitative outcome measures may not have adequately captured the effects of the intervention. While the measures used were chosen to align with the overarching DBT STEPS-A modules taught to the students, they are not a perfect match.

In contrast, a feasibility study on a 22-week DBT STEPS-A intervention found a statistically significant impact of the program on DERS and a general well-being measure with moderate effect size (Ramage, 2019).

Hypothesis Two

Additionally, there were no statistically significant differences between the control and intervention group on outcome measures controlling for baseline scores. These findings are aligned with school-based DBT skills group research conducted by Burckhardt et al. (2017) who found no statistically significant differences across the control and DBT intervention groups.

It is possible that the program did not produce changes in outcome measures different from the control group. Another possible explanation is that the time post-intervention data were collected coincided with the week before students' finals week. Anticipation of finals week could have increased participants' distress levels, affecting the way they responded to the questionnaires and overshadowing the effects of the intervention. Additionally, the measures may not have been sensitive enough to capture changes that did occur in the intervention group as the measures did not precisely map onto the material taught to the students.

Exploratory Aim

Participants found the program at least somewhat effective (average score of 4 on a 7-point Likert scale) at accomplishing the goal of teaching practical decision-making and coping skills. Students enjoyed the program and usually found it relevant or somewhat relevant to their age group, cultural group, and to them as individuals. Participants most often reported their favorite skills were mindfulness and interpersonal effectiveness.

Themes emerging from the thematic analysis include (1) the importance of learning about mindfulness and emotions/emotion regulation. Despite participants' reporting skills most learned pertained to emotions/emotion regulation and mindfulness, they reported that they would have liked to learn more about these topics. (2) Participants identified that they could use the skills learned when distressed or in interpersonal situations. (3) Third, in-session activities and engagement are important to students. Reponses to questions about the most-liked and least-liked aspect of Wise Mind, as well as areas for improvement included activities and engagement. This theme of in-session engagement was noted across other studies (Burckhardt et al., 2017; Panish, 2021).

Limitations

Several limitations should be noted. First, this sample was not randomized to groups. Consequently, the control group and intervention group were not similar, as 64% of participants in the intervention group were in Special Education classes and 100% of students in the control group were in General Education classes. While there were no statistically significant differences between groups at baseline on outcome measures, it is important to consider differences between the groups. Those in Special Education and General Education groups may have understood and interpreted the questionnaires and the program differently due to the presence of learning or intellectual disability, cognitive functioning, etc.

Other threats to internal validity include history and measurement. A small sample size and brevity of the intervention are other limitations which should be considered. Further, teachers elected for their classes to participate in Wise Mind and the research, introducing self-selection bias as a potential confound. Several of these limitations highlight the realities of both implementing school-based interventions and conducting research in a school setting.

Implications and Future Research

The results of this study have implications for both future research and future implementation of the Wise Mind program. Future research should aim to identify the Wise Mind curriculum content and language used to explain DBT STEPS-A concepts are most salient to participants' personal and cultural context. Strategies such as focus groups could be used to learn more about the acceptability and effectiveness and contextualize quantitative results. Additionally, future research should utilize measures validated for the specific population of interest. This is particularly important in a culturally diverse context. Collecting additional data with the goal of greater understanding of the sample would also be advantageous. For instance, future research involving a Special Education sample should seek to understand how many students in the sample have Learning Disability, Intellectual Disability, ADHD, etc. Other information that would be important includes participants' household income. Addressing other internal and external validity problems, such as randomization to groups, should

also be considered. If randomization is not possible, and teachers elect to have their classes participate in the intervention and research, attending to the confounding nature of self-selection bias would be important. Asking teachers about why they chose to have their classes participate may assist in understanding the effects of self-selection bias.

Future studies should also include a greater number of Wise Mind sessions and adhere more closely to the recommended number of sessions per module outlined in the DBT STEPS-A manual. Although designed to be flexible, the authors of DBT STEPS-A assign the following number of sessions for each module: one session for Dialectics, seven for Mindfulness and Distress Tolerance, eight for Emotion Regulation, and six for Interpersonal Effectiveness. Ensuring students get the recommended number of sessions may allow researchers to understand the program's effectiveness more fully. Similarly, recording attendance at each session would be useful to assess how many sessions each participant actually received. A natural progression of obtaining these data would be to investigate the optimal "dose" of Wise Mind sessions.

An additional avenue for investigation involves assessing the effectiveness and acceptability of each module separately. To do this, researchers may examine pre-post data from an intervention group that receives an entire semester of sessions spent on one module (e.g., mindfulness) versus a control condition (e.g., Health or P.E. class) or versus another module (e.g., emotion regulation).

Moreover, operating within an implementation science framework may be advantageous. Consistent with this framework, researchers should work *with* the unique environmental, cultural, and social contexts in which Wise Mind is delivered, rather than attempt to control for the influence of these factors, with the goal of understanding how Wise mind can be delivered in a way that has positive impacts on students. Participatory Action Research and a variety of qualitative and quantitative strategies, as well as including other stakeholders such as teachers and parents may assist in accomplishing this goal (Taghreed et al., 2014).

The results of this study, particularly the exploratory aim, also have implications for improving future implementation of Wise Mind. Moving forward, Wise Mind session should include more opportunities for engagement, such as games and activities, and decreased amount of lecture-style content delivery. Delivering more content related to emotions and mindfulness and exploring about what aspects of these topics are important to students should be considered. Facilitators may wish to elicit feedback from students each session about their perceptions of how the program is going and what skills they are learning and would like to learn more about to identify language and content with which students find most salient.

Finally, facilitators should be mindful of the various cultural contexts from which the students come and modify delivery of content as needed. Facilitators of Wise Mind used Socratic questioning to elicit students' own examples and ideas when teaching content, rather than imposing values or beliefs onto students. However, Wise Mind was not specifically culturally tailored. In this study, 32% of participants responded that the program was sensitive to diversity and culture, while 52% responded that it was "somewhat" sensitive, and 16% responded that it was *not* sensitive to diversity and culture. This highlights an area for improvement regarding cultural fit. While the DBT-A manual (Rathus & Miller, 2015) devotes a small section to cultural consideration (primarily related to the composition of therapy groups), the DBT STEPS-A manual does not mention cultural considerations.

Given their finding that much of the variance in their results was associated with gender and ethnicity, Martinez et al. (2021) stressed the importance of ensuring that DBT STEPS-A is appropriate for the culture to which it is delivered. Others (Van Berkel, 2023; Van Druen, 2023) acknowledged the shortcomings of DBT pertaining to cultural responsiveness and provide recommendations for future research and practice.

One way to improve cultural fit is through adaptation of the program through systematic modification. A process outlined by Castro et al. (2010) suggests that intentional steps should be

taken to assess the specific needs of the group, determine which elements of the intervention should be modified, and evaluate the outcome of the adaptation using qualitative and quantitative methods. Another strategy includes increasing anti-racism in DBT with facilitators adopting multicultural and social justice competencies into their work with students (Pierson et al., 2022).

Conclusion

With the increase of mental health concerns among adolescents, effective and acceptable preventive measures are imperative. This is especially important for adolescents from racial-ethnic minoritized and low-income backgrounds in order to mitigate the effects of health disparities. Universal school-based SEL programs, such as DBT STEPS-A is one such preventative measure. Wise Mind, a school-based DBT STEPS-A based program is an SEL program designed to teach adolescents practical decision and coping skills. Research on DBT STEPS-A in low income, culturally diverse backgrounds is lacking, and no prior research has been conducted on the Wise Mind program specifically. This was the first study to evaluate the effectiveness and acceptability of the Wise Mind program.

Important insights into the Wise Mind program were identified from the results of this study. Quantitative results demonstrated no differences pre- and post-intervention in the intervention group on outcome measures and no statistically significant differences between the control and intervention groups on outcome measures controlling for baseline scores and, consistent with some prior research. Qualitative results suggest that students found the program at least somewhat effective and acceptable. Students learned skills in the realm of emotions/emotion regulation and mindfulness and could use these skills when distressed or in interpersonal situations. Increased in-session engagement and activities would improve the program. The challenge of both conducting research and delivering SEL programs in school settings was another important insight gleaned from this study. This study also lays the groundwork for future research on the acceptability, feasibility, and effectiveness of SEL programs in diverse populations.

Ultimately, findings from this study expand our understanding of how to improve Wise Mind and other SEL programs in the future when delivered to diverse populations, with the overall goal of promoting adolescents' socioemotional success and well-being.

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