HHS Public Access

Author manuscript

J Adolesc. Author manuscript; available in PMC 2024 March 18.

Published in final edited form as:

J Adolesc. 2024 February ; 96(2): 322–336. doi:10.1002/jad.12277.

Feasibility, Acceptability, and Depression Outcomes of a Randomized Controlled Trial of Mindful Self-Compassion for Teens (MSC-T) for Adolescents with Subsyndromal Depression

Karen Bluth, PhD[a,*], **Christine Lathren, MD, MSPH**[b], **Jinyoung Park, MS**[c], **Chanee Lynch, MPH**[b], **John Curry, PhD**[d], **April Harris-Britt, PhD**[e], **Susan Gaylord, PhD**[b]

[a]Department of Psychiatry, University of North Carolina School of Medicine, Frank Porter Graham Child Development Institute, University of North Carolina at Chapel Hill, USA

[b]Department of Physical Medicine and Rehabilitation, Program on Integrative Medicine, University of North Carolina School of Medicine, Box 7200, Chapel Hill, NC, USA

[c]Department of Psychology and Neuroscience, Duke University, Durham, NC USA

[d]Department of Psychiatry and Behavioral Sciences, Duke University, Durham, NC USA

[e]AHB Center for Behavioral Health and Wellness, Durham NC

Abstract

Introduction: Adolescents are experiencing high rates of depressive symptoms, with negative consequences to their long-term health. Group-based, mindful self-compassion programs show promise in mitigating the development of more significant depression in at-risk adolescents. However, the lack of well-designed, active control conditions has limited the ability to examine the efficacy of such interventions.

Methods: Fifty-nine adolescents (Mage=15.81, 70% female) with subsyndromal depressive symptoms from the Southeastern US were randomized to group-based Mindful Self-Compassion for Teens (N=30) or a newly developed active control Healthy Lifestyles group (N=29) during 2018 and 2019. Participants attended 8 weekly 'main' sessions followed by 6 monthly continuation sessions. The feasibility and acceptability of participation in both groups were measured using attrition, attendance, credibility, and satisfaction data. Depression scores were collected weekly and self-compassion scores were collected 5 times across 36 weeks.

Results: Both groups were equally feasible and acceptable during the 8-week program period; however, monthly continuation sessions were poorly attended in both groups. The risk of developing clinically significant depression was 2.6 times higher in the control group compared to the self-compassion group (p=.037) across 36 weeks. Depression significantly decreased in the self-compassion group, while it significantly increased in the control group. Both groups increased significantly in reports of self-compassion. These findings are on par with results noting the

*Corresponding author.

COI statement: Author KB declares she receives compensation to teach and train teachers in the MSC-T curriculum. All other authors have no conflicts to declare.

efficacy of cognitive-based interventions for high-risk adolescents; follow-up studies with larger sample sizes should be conducted to confirm these findings.

Conclusions: Initial examination suggests Mindful-Self Compassion for Teens programming is feasible, acceptable, and efficacious in preventing the development of clinically significant depression in adolescents with subsyndromal depression. Future studies may benefit from refinements to the self-compassion measurement and/or the attention control condition; moreover, larger sample sizes are needed to confirm results.

Introduction

Depression in adolescence has increased dramatically over the last decade, and precipitously during the Covid-19 pandemic. According to the December 2021 Surgeon General's advisory, the US is currently facing a youth mental health crisis, and urgent action is needed (Protecting Youth Mental Health: The US Surgeon General's Advisory, 2021). The increase in mental health challenges among youth is alarming; for example, in 2021, 42% of all students surveyed (57% of females and 29% of males) indicated they experienced persistent feelings of sadness and hopelessness to the degree that they could not engage in regular activities. Almost one-fourth of all students seriously considered suicide (30% of females, 14% of males), and 18% made a suicide plan (24% of females, 12% of males). These stark findings reflect an almost 60% increase in overall depression and suicidal ideation over the last decade (Youth Risk Behavior Survey: Data Summary and Trends Report 2011–2021, 2023). Statistics for LGBTQ+ students are even more disturbing; almost 70% experienced persistent feelings of sadness and hopelessness, 45% considered suicide, 37% made a suicide plan and 22% reported attempting suicide (Youth Risk Behavior Survey: Data Summary and Trends Report 2011–2021, 2023). These trajectories are reflected globally; a meta-analysis which included reports on 80,000 adolescents from East Asia, Central America, South America, Europe, the Middle East and the U.S. indicated that depression doubled during the pandemic, with one out of every four adolescents reporting that they are experiencing depressive symptoms (Racine et al., 2021).

Adolescents struggling with depression are often set on a maladaptive behavior trajectory which may lead to academic challenges, substance abuse, risky sexual behavior, impairment in relationship building, or suicidality (Anatale & Kelly, 2015; Burke et al., 2018; Fergusson et al., 2007; Joosten et al., 2022). Depressive symptoms are associated with sleep disturbances among adolescents (e.g., insomnia and hypersomnia), exacerbating the negative impacts on health and social domains (Lovato & Gradisar, 2014). Most notably, these depressive-related challenges emerging in adolescence often persist beyond adolescence and into adulthood, resulting in an altered behavioral and educational trajectory such as dropping out of high school, unemployment, substance use, and unplanned early pregnancy/parenthood (Clayborne et al., 2019; Fletcher, 2008). Moreover, those experiencing depression as adolescents are more likely to have poor somatic health outcomes later in life such as migraine headaches (Naicker et al., 2013), cardiovascular disease (Park et al., 2023) and obesity (Richardson et al., 2003). Subsequently, depression in adolescence has been shown to predict poorer health, higher health-care utilization, low levels of social support, and increased work impairment due to physical health over the

subsequent decade (Keenan-Miller et al., 2007; Naicker et al., 2013). Those youth who experience subsyndromal depression, defined as evidencing symptoms of major depression, but not of the severity to meet a diagnosis of major depression (Fergusson et al., 2005), have a higher risk, compared to non-depressed adolescents, of developing major depressive disorder (MDD) as adolescents (Uchida et al., 2021) and adults (Alaie et al., 2022; Garber, 2006; Lewinsohn et al., 2000).

Clearly, there is an urgent need for depression prevention programs. Some cognitive-behavioral (e.g., Garber et al., 2009), psycho-educational (e.g., Beardslee et al. 2003), and interpersonal interventions (e.g., Young et al., 2006) have shown significant prevention effects. Overall, however, a meta-analysis of 47 studies evaluating 32 depression-prevention programs for youth reported that only 41% of the programs included in the study had significant reductions in depressive symptoms post-intervention and the effect sizes were small (Stice et al., 2009). Additionally, many of the trials had either waitlist or assessment-only control conditions, which are likely to overestimate effect sizes (Stice et al., 2006). Furthermore, only 4 of 47 trials produced significant reductions in future depression onset (Stice et al., 2009).

The lessons learned from these depression-prevention programs have implications for future program design. For example, the most effective programs utilized professional interventionists (rather than classroom teachers), assigned homework, and were relatively short in length (Stice et al., 2009). Also, the developmental appropriateness of CBT for adolescents has been questioned, as these youth may not be able to fully grasp the concepts foundational to CBT (Curry et al., 2014). More recently, depression prevention programs have been brought into school environments, and a meta-analysis of school-based programs targeted to reduce depression have evidenced decreased symptoms, but these outcomes did not last over time and were moderated by age, race, gender, and dose (Feiss et al., 2019).

Self-compassion interventions show promise in alleviating depressive symptoms among adolescents (Bluth et al., 2016; Bluth et al., 2023). A personal resource that can be accessed at emotionally challenging times, self-compassion in both adults and adolescents has demonstrated inverse relationships with depressive symptoms with large effect sizes (see meta-analyses among adults: MacBeth & Gumley, 2012; adolescents: Marsh et al., 2018; Pullmer et al., 2019). Neff (2023a) has developed a widely used conceptualization of self-compassion based on the interplay of six components, three compassionate self-responding components and three uncompassionate self-responding components. These components include mindfulness, or maintaining awareness and perspective when faced with difficult emotions vs. overidentification, or exaggerating one's difficult emotions or thoughts in response to a situation; common humanity, or understanding that experiencing difficult emotions are normal and part of the experience of being human vs. isolation, or feeling alone with one's difficult emotions; and self-kindness, or taking an active role in engaging in self-supportive behavior vs. self-judgment, or judging oneself harshly in response to our suffering. High levels of compassionate responding and low levels of uncompassionate responding are thought to work together in a dynamic system to promote well-being and resilience under stressful circumstances. Furthermore, evidence from a cross-lagged panel

longitudinal study suggests that lack of self-compassion may increase vulnerability to depressive symptoms (Krieger et al., 2016).

To date, clinicians and researchers have designed many promising interventions with the goal of strengthening the skill of self-compassion for both community and clinical samples, with a meta-analysis of 27 randomized controlled trials showing moderate effect size for depressive symptoms (Ferrari et al., 2019). The way in which increasing self-compassion in these interventions results in decreased depressive symptoms is theorized to be through increasing emotion regulation and lowering fears of self-compassion and negative self-relational processes (i.e., self-criticism, perfectionism, and shame-proneness) (Finlay-Jones, 2023). In adolescents, one mechanism of change that is theorized is self-criticism, and youth indicated as such in a qualitative study; additionally, they indicated that they would likely engage in an intervention that focused on lessening self-criticism (Egan et al., 2022).

A self-compassion intervention for adolescents that teaches how to decrease self-criticism and cultivate self-compassion is Mindful-Self-Compassion for Teens (MSC-T), previously called Making Friends with Yourself, a mindfulness-based self-compassion group program designed specifically for adolescents based on Neff's conceptualization of self-compassion. The MSC-T curriculum, which includes didactics, group discussion, art, and developmentally appropriate activities is not restricted to clinical samples and has been shown to be feasible, acceptable, and associated with decreases in depressive symptoms (Bluth & Eisenlohr-Moul, 2017; Bluth et al., 2016; Bluth et al., 2023).

However, despite promising initial findings, there is limited ability to draw conclusions about the efficacy of MSC-T in preventing depression. First, previous studies of MSC-T did not include as eligibility criteria having depressive symptoms (Bluth & Eisenlohr-Moul, 2017; Bluth et al., 2016; Bluth et al., 2023), and therefore it is unclear whether MSC-T was contributing to decreasing depressive symptoms and also whether MSC-T would be feasible for adolescents with depressive symptoms. Second, follow-up assessments were limited, and booster sessions were not implemented. Booster sessions have been shown to increase the efficacy of an intervention in numerous studies, including improving the recovery rate of those who remained depressed at the end of the acute stage in an adolescent depression intervention (Clarke et al., 1999). Third, the evidence to date for MSC-T and other self-compassion interventions for adolescents is derived from small, single armed studies, or randomized studies that utilize a waitlist control. Adequately powered randomized controlled trials, in which MSC-T is compared to an active control group, are needed to confirm that strengthening self-compassion skills leads to decreased depression and improved well-being (Egan et al., 2021). However, the development of a feasible and credible control group that mimics the non-specific components of the intervention (e.g., schedule and duration of practice, therapeutic environment, social support) while avoiding the intervention's unique "active" ingredients has been challenging for mind-body interventions and complex psychosocial interventions in general (Aycock et al., 2018; Kinser & Robins, 2013).

Additionally, research on adolescent depression interventions has identified several key issues within the field. Interventions that target adolescents who are at high-risk for

depression, as opposed to a universal approach, alleviate significant future burden and have been identified as a cost-effective effective public health approach (Ssegonja et al., 2019). Researchers have also identified the need to explore and address trajectories of symptoms post-intervention, as well as ways to mitigate waning intervention effects over time. Thus, examining self-compassion interventions in adolescents at high-risk of depression and over extended time periods is a priority.

To begin to address these gaps, this study has the following aims: (1) using implementation and satisfaction data, examine and compare the feasibility and acceptability of Mindful Self-Compassion for Teens (MSC-T), with a newly developed group-based Healthy Lifestyles (HL) educational control program for adolescents with subsyndromal depression; (2) examine time to incident depression at 6-months post-program completion in the adolescents assigned to MSC-T, as compared to the adolescents in the HL control program; (3) examine the trajectory of depressive symptoms and self-compassion scores over time between the two groups. We hypothesize that (1) MSC-T will be feasible and acceptable for adolescents with subsyndromal depression; (2) the HL group will evidence a significantly shorter time to incident depression at 6-months post-program compared to the MSC-T group, and (3) depressive symptoms will evidence a greater decrease and self-compassion will evidence a greater increase in the MSC-T group.

Method

Participants

Participants were 59 adolescents with subsyndromal depression who were randomized to and attended at least one session of either the Mindful Self-Compassion for Teens (MSC-T) program (N= 30) or the Healthy Lifestyles (HL) program (N= 29). Three cohorts of simultaneously running programs were offered. Cohort 1 began in October 2018, cohort 2 began in January 2019, and cohort 3 began in October 2019. See Table 1 for demographic details by group.

Procedures

All procedures were approved by the of North Carolina-Chapel Hill IRB. Participants were recruited to participate in a study testing two stress management and resilience programs from the community via three primary ways: (1) referrals from local guidance counselors and school personnel; (2) flyers posted in local schools and community settings (e.g., e-flyers to local high school list serves, university and community boards in locations that provide services to teens and to the community at large (e.g., libraries and coffee shops); (3) in person recruitment at community events, youth programs (e.g., local teen centers), and an information table set up at a local high school during lunch hour. Interested parents or adolescents contacted the study team through a study phone number, email, and/or through completing an interest form on a secure study website.

Once connected to the study team, screening for eligibility occurred through a two-step process. After verbal consent from parent and adolescent for screening, high school students aged 13–17 with an internet-enabled device were assessed for subsyndromal depression

using the Quick Inventory of Depression Symptomology (QIDS) screening questionnaire (Trivedi et al., 2004), with a minimum score of 6 required for eligibility. This screening threshold was determined by the level indicated for minimal mild depressive symptoms (Rush et al., 2003). After initial screening, the parents/guardians provided full consent and permission; adolescents also provided assent.

Next, adolescents met face to face with the study mental health team for a second eligibility process using the Diagnostic Interview Schedule for Children (DISC-IV) (Schaffer, 2000). Adolescents with major depression, active substance use disorder and/or suicidal ideation, schizophrenia, bipolar disorder, severe autism or developmental delay, or those who had a psychiatric hospitalization within the past 6 months were ineligible to participate. Participants who met all study criteria were considered officially enrolled and completed baseline measures.

After approximately 15 eligible adolescents were enrolled and completed baseline measures, they were randomized to either the intervention or control programs using a random numbers generator with a permuted block design (blocks of 2 to 4) to ensure that the numbers of participants allocated to the two arms over time were equal. Randomization was stratified by gender. In all, 3 cohorts were randomized.

Both the MSC-T intervention and HL active control program met in person, after school in a community setting (i.e., a building on a local college campus for main 8-week programs), for one 90-minute weekly session over eight weeks. The two programs were held on opposite sides of a large, multi-classroom building, and were timed to start 30 minutes apart, so that the participants would not inadvertently encounter a participant who was attending the other program. The sessions were audio recorded for fidelity assessment by a research team member. Both programs were co-led by a trained instructor and a mental health provider. A mental health provider was also present in each group session; these were psychologist/social work interns or school counselors who work with adolescents. Their role was to monitor for any mental health concerns during sessions and connect participants with the study mental health team as needed.

For MSC-T, the trained instructor completed a six-day intensive training to teach MSC-T and 10 peer consultation sessions, offered through the Center for Mindful Self-Compassion (www.centerformsc.org), a non-profit organization whose mission is to disseminate self-compassion programs globally. The instructors were a former middle school teacher, a middle school counselor, and a certified instructor of MSC-T, all of whom had experience teaching adolescents in groups. For the HL group, the trained instructor was either a health behavior specialist, a preventive medicine specialist, or a high school teacher with experience teaching health-related curricula. All instructors had experience teaching adolescents and completed a 2-hour training process where the study team reviewed the curriculum and course expectations with the instructors. Additionally, the study team emphasized the importance of not mentioning any aspects of self-compassion (i.e., mindfulness, common humanity, self-kindness) to the adolescent participants.

In addition, monthly 90-minute booster sessions occurred for the six months after each 8-week program. The purpose of these sessions was to review skills and to encourage continued practice of skills learned in each program. Thus, adolescents who completed the study were enrolled for approximately 8 months and were compensated up to $175 for completing questionnaires. They were not compensated for attending program sessions. Also, parents were compensated up to $175 for travel and parking costs.

Mindful Self-Compassion for Teens (MSC-T) Intervention Group—Adolescents participated in eight weekly after-school sessions that included group discussions, exercises, guided meditations, and practices designed to increase adolescents' skill in responding to difficulties with self-compassion (see Table 2).

Healthy Lifestyles Control Group—Adolescents participated in eight weekly evening sessions that included group discussions, activities and short video clips designed to increase adolescents' ability to maintain a healthy lifestyle. The weekly session content was initially developed and piloted at beginning of the study (see Table 3).

Measures

Feasibility and Acceptability Measures—Feasibility measures were (1) attendance in main program by group; (2) attendance in booster sessions by group; (3) retention by group, as measured by percent of participants who stayed in program to completion.

Acceptability was assessed via the following two measures:

Feelings about the Class (FATC; Clarke & Lewinsohn, 1995).: Participants in each group completed a questionnaire that was developed for Gregory Clarke's "Coping with Stress" program, with permission from the author. This questionnaire was designed to assess participants' feelings about the instructors and other class participants as well as overall satisfaction with the program. It was administered electronically at the last session for both programs. Items 2, 3, and 4 were selected for analysis, as these three items were the most representative of acceptability of the content of the intervention as well as feelings about the group itself. These multiple choice items were: 1) How well do you like the group you are in (five responses ranged from "very much" to "dislike it very much", 2) If some members of your group decided to quit the class, would you like a chance to talk them out of it (five responses ranged from "I would try very hard to persuade them to stay" to "I would definitely not try to persuade them to stay", and 3) Do you feel that working with your group helped you to meet most of your goals about preventing depression? (five responses ranged from "Definitely" to "Definitely not"). The mean of the three items ranged from 1 to 5. Cronbach alpha was 0.79 in this study for the three items.

Expectations of Benefit/Credibility (CRED; Borkovec & Nau, 1972).: This instrument, administered at the end of the first class, provides an assessment of expectation of benefit and credibility of each intervention using an adaptation of a validated scale previously developed for psychological studies for purposes of comparing two treatment arms. Participants respond to 6 items on a 9-point scale ranging from 1 (not at all) to 9 (very much). The mean of the three items ranged from 1 to 9. Examples of items are "How much

does what's being taught in this course make sense to you in helping to you deal with teen issues?" and "How confident are you in recommending this course to a friend?" Content validity has been confirmed for the original and a modified version (Martens et al., 2017). Internal reliability is good with alphas from .84 and .85, and test-retest reliability over 1 week has been established (Devilly & Borkevec, 2000). Modified versions have been used with adolescents (e.g., Bluth et al., 2016; Larsson et al., 1987) and children (March et al., 2008). Internal consistency in this study was $\alpha = .86$.

Fidelity Measures

MSC-T Rating Instrument.: Checklists were created for each of the eight sessions of the MSC-T curriculum. Each session checklist contained the prescribed elements of that session; that is, the key elements (i.e., meditations, topics, exercises) of the session. For example, Session 5 had six prescribed elements: 1) Art activity: mindful bowls, 2) Opening Meditation: A Person Just Like Me, 3) Topic: Self-Compassion vs. Self-Esteem, 4) Informal Movement Practice: Crossing the Line, 5) Exercise: Japanese Bowls, and 6) Home Practice discussion. For each prescribed element, the following rating scale was used: 0 (no evidence of that element within the session), 1 (slight evidence) and 2 (definite evidence). See Supplementary File 1 for sample MSC-T fidelity rating instruments.

HL Rating Instrument.: Checklists for the eight HL sessions were created similarly to that of the MSC-T sessions. In addition to the key prescribed elements in each session, proscribed elements were also included; these were elements that were not to be mentioned during the session because they overlapped with one of the key self-compassion components. For example, there were five prescribed elements in Session 6: 1) The Story Game, 2) Why Be Creative, 3) Galaxy Jars, 4) Finger Knitting, 5) Reflection and Discussion, and three proscribed elements in Session 6: 1) Elements of Mindfulness: Discussion of awareness of present moment experience, nonjudgment/acceptance of present moment experience, letting go of whatever is upsetting you, mindfulness or meditation; 2) Elements of self-kindness: Suggestions relating to taking care of oneself, being kind to oneself, and engaging in self-soothing behaviors; 3) Common Humanity: Asking "Do others feel this way?" or "Have others experienced this?", encouraging sharing of emotional experiences (e.g., anxiety, depression, mood swings, worry). For each element, the following rating scale was used: 0 (no evidence of that element within the session), 1 (slight evidence) and 2 (definite evidence). See Supplementary File 2 for sample HL fidelity rating instruments.

A research team member evaluated the fidelity by using a random number generator to select a sample of 10 audio recorded sessions for rating (5 MSC-T sessions and 5 HL sessions, representing 21% of all sessions). To ensure a representative sample, recordings from different session numbers and instructor teams were rated. A fidelity score for prescribed elements was calculated by dividing the number of elements covered in the session by the total number of elements. A higher percentage indicates higher fidelity for prescribed elements. A fidelity score for proscribed elements was calculated by dividing the total number of proscribed elements mentioned in the sessions by the total number of proscribed elements. A lower percentage indicates higher fidelity for proscribed elements.

Outcome Measures

PROMIS Pediatric Depression Short Form (Irwin et al., 2010).: The PROMIS Pediatric Short Form is a brief 8 item survey designed to assess depression and was administered to participants once weekly throughout the 36 weeks. This scale assesses both cognitive and affective depressive symptoms (i.e., sadness, loneliness, worthlessness) over the past 7 days; items are reported as t-scores, which are centered around a mean of 50 and a SD of 10. Internal consistency and test-retest reliability are high (Varni et al., 2014). The American Psychological Association recommends a score between 60–70 to indicate moderate depression, and scores over 70 to indicate severe depression, as stated in the DSM-5 (2013; Diagnostic and Statistical Manual of Mental Disorders, 2013). For the current study, it was agreed that a cut-off score of 65 (93rd percentile) would be appropriate. This scale was administered at baseline and then weekly throughout the 36-week study.

Self-Compassion Scale (SCS: Neff, 2003).: On this 26-item scale, participants indicated their responses to each item using a 5-point scale ranging from 1 (almost never) to 5 (almost always). Construct validity was established through expected correlations with the self-criticism subscale of the Depression Experience Questionnaire, the Social Connectedness scale, and the attention, clarity, and repair subscales of the Trait-Meta Mood Scale. Convergent and divergent validity were established (Cunha et al., 2016) via positive correlations with the Early Memories of Warmth and Safeness scale (Richter et al., 2009) and negative correlations with psychopathology symptoms using the DASS-21 (Lovibond and Lovibond, 1995). Cronbach alphas in previous scales with adolescent samples range from .78 to .90 (e.g. Barry et al., 2015; Bluth & Blanton, 2014; Neff & McGehee, 2010; Tanaka et al., 2011). Internal consistency in the current study was found to be excellent (α = .93). Participants completed this questionnaire at five time points: pre-intervention, mid-point of intervention, post-intervention, 3 months post-intervention, and 6-months post intervention.

Statistical Analyses

Time to incident depression was examined using exploratory nonparametric (Kaplan-Meier plots) and semi-parametric analyses (Cox proportional hazards models). To account for the missing values, a multiple imputation was conducted with R MICE (Multivariate Imputation by Chained Equations) package using PMM (predictive mean matching) method (Van Buuren & Groothuis-Oudshoorn, 2011). Ten multiply imputed datasets were created. Next, a linear mixed-effect model was performed to compare the different trajectories of change in the PROMIS depression t-score and the self-compassion score over time by the group using the lme4 package (Bates et al., 2015). Participants' IDs were entered as a random intercept to account for the within-subject correlations. The possible random effect of the cohort was also accounted for in the model. Facilitators were included in the model as random effects nested in groups. The fixed effects were comprised of time, group, as well as the interaction between time and group. The variable of interest was time and group interaction which indicates the difference in the rate of change over time by group. Significance was calculated using the lmerTest package (Kuznetsova et al., 2017). The model specification was as follows: outcome ~ time * group + (1 | ID) + (1 |Group/instructor) + (1|cohort).

Results

Feasibility

Attendance rates for the 8-week main intervention sessions were similar between groups. Seventy-three percent (73%) of participants in the intervention group attended at least 6 of 8 weekly program sessions, as compared to 74% of participants in the control group. However, attendance rates for the monthly booster sessions were much lower, with 47% of intervention group participants and 39% of control group participants attending at least 4 of 6 monthly sessions.

Retention rates were also similar for both groups (see Figure 1 consort). After randomization, both groups had low attrition rates, with only one participant notifying study personnel that they were withdrawing from the control group after having started the course sessions, indicating that they found the content repetitive with a school health class. Therefore, retention rate was 100% in MSC-T group and 97% in HL group.

Acceptability

A linear regression model was used to test whether there was a significant difference between groups in the CRED and FATC. The results showed that there was no significant difference between groups in either CRED, t = 1.11, df = 46.89, p = .27, Cohen's d = 0.31 (M = 6.26, SD = 1.44 for the MSC-T, and M = 6.66, SD = 1.20 for HL), or FATC, t = 1.47, df = 38.74, p =.15, Cohen's d = 0.45 (M = 2.25, SD = 0.78 for MSC-T, and M = 2.63, SD = 0.95 for HL). Thus, both groups were considered equally acceptable.

Fidelity

Five randomly selected intervention session audio recordings (including at least one session from each cohort) were reviewed and assessed for adherence to 32 prescribed elements on a scale of 0 (no evidence) to 2 (definite evidence). Ratings indicated adherence to prescribed elements for the intervention group was 62/64 (97%).

Five randomly selected control session audio recordings (including at least one session from each cohort) were reviewed and assessed for adherence to 33 prescribed elements and 45 proscribed elements on a scale of 0 (no evidence) to 2 (definite evidence). Ratings indicated adherence to prescribed elements for the control group was 66/66 (100%), while inclusion of proscribed elements was 3/45 (7%).

Time to Incident Depression

A log-rank test showed a significant difference between the MSC-T group and the control group, X2 (1, N = 60) = 4.7, p = .03. Overall, the risk of developing depression at any time point was significantly higher for the control group compared to the MSC-T group. The Kaplan-Meir plot and the risk table confirm the different numbers of incident depression between the two groups (Figure 2). The median survival time, the length of time when the number of participants still without moderate depression reaches 50%, was 31.85 weeks for the HL group. The MSC-T group did not reach the median survival time, meaning over 50% of the participants remained undiagnosed with depression by the end of the

study (36 weeks). Seven participants in the MSC-T group and 15 participants in the HL group developed depression. Finally, the Cox regression showed that the risk of developing depression was HR = 2.60 times higher for the control group compared to the MSC-T group, coef = −.96, SE = .46, p = .037.

Trajectories of Depressive Symptoms and Self-Compassion

A linear mixed-effect model on depression t-score showed that the time × group interaction was significant, β = −0.16, z = −3.11, p = .002. This means that the depression t-score decreased at a higher rate over time in the MSC-T group compared to the HL group (Table 4). The two groups started to diverge from the beginning of the study, and their level of depression became significantly different from around month 5 till the end of the study. There was no significant effect of time, β = 0.02, z = 0.44, p = .66, and no significant group difference at baseline, β = −0.23, z = −0.09, p = .93 (see Figure 3).

A linear mixed-effect model on the self-compassion score showed that there was no significant time and group interaction effect, meaning there was no significant difference in the trajectory of change in self-compassion between the groups over time, β = −0.003, z = −0.39, p = .70. There was significant time effect, at week 9 and week 23, β = 0.36 – 0.55, z = 2.14 – 2.80, p = .032 – .005, indicating that self-compassion increased significantly in both groups during intervention. There was no significant difference in baseline self-compassion between the groups, β = 0.04, z = 0.19, p = 0.85.

Discussion

This study sought to examine the feasibility, acceptability, and course of development of depression of a group-based self-compassion intervention compared to an active healthy lifestyles education control intervention targeting adolescents with subsyndromal depression. To our knowledge, this is the first study to explore whether self-compassion skills can prevent the development of clinically significant depression in high-risk adolescents when compared to an active control, as well as explore the trajectories of depressive symptoms and self-compassion in both groups longitudinally over a 36-week period.

To answer our first research question which examined feasibility and acceptability of the two interventions, we assessed attendance/retention data and acceptability data. Regarding feasibility, both groups had low attrition (only 1 participant withdrew) and good attendance during the main intervention period (8 weeks). Specifically, approximately 75% of both MSC-T participants and HL participants attended at least 6 of 8 main intervention sessions. Seventy-five percent attending at least 75% of sessions is similar to other in-person adolescent interventions which found attendance to be 70% −75% (Kohut et al., 2020; Chadi et al., 2016; Mendelson et al., 2010; Sibinga et al., 2011; Sibinga et al., 2008). However, attendance waned significantly across the 6 months post-intervention booster sessions for both groups, with less than 50% of participants in each group attending at least 4 of 6 monthly booster sessions. It may be that monthly booster sessions are not a priority for busy adolescents who have already completed the “main” program. Also, once a month sessions may be spaced too far apart to maintain a feeling of connection to the group or may be less

engaging given the topics often covered previously learned material. Future studies should examine how dose impacts outcomes, discerning benefits of and number of booster sessions needed for optimal impact. Qualitative data gathered through interviews or focus groups can ascertain reasons for lack of attendance at booster sessions and can inform the necessity, form, and structure of booster sessions. For example, it may be that conducting the booster sessions in a different format, such as virtually, would better meet the needs and interests of adolescents, particularly given the convenience and familiarity of such formats. These virtual sessions could be held either monthly for an hour or bi-weekly or weekly for a shorter length of time, such as 15–20 minutes. Having more booster sessions that are shorter and more frequent might be more developmentally appropriate for adolescents. Qualitative data would be helpful in answering these questions. Finally, acceptability measures were equivalent between groups, suggesting that adolescents found the content of the two programs equally interesting and expected similar benefits from them.

To address our second research question which compared probability and rate of developing depression in MSC-T and the HL groups, we used Kaplan Meier plots and Cox regression. We found adolescents in the HL control group were over twice as likely to develop clinically significant depression over the course of the study's 36-week period, compared with adolescents in the MSC-T group. These findings are on par with results noting the efficacy of cognitive-based interventions for high-risk adolescents (Clarke et al., 2001; Garber et al., 2009); follow-up studies with larger sample sizes should be conducted to confirm these findings. Given that self-compassion interventions are inexpensive, scalable programs offered outside of the mental health system (e.g., see Finlay-Jones, 2023; Neff, 2023a), and therefore do not carry the stigma of seeing a therapist (Kaushik et al., 2016), and can be taught by instructors with a wide range of backgrounds, these findings suggest self-compassion programming may be a highly promising public health tool to address the youth mental health crisis.

To address our third research question which examined trajectories of depression and self-compassion over time, we inspected weekly PROMIS depression scores and self-compassion scores over five time points across the 36 weeks study timeframe in both groups. We found significant differences in changes in depression scores over time between the HL control group and the MSC-T group. The HL group showed increases in depression scores over time, in contrast to the MSC-T group, which evidenced decreased depression scores over time. The decrease in depression is similar to that found in other studies of MSC-T (Bluth et al., 2023). Meanwhile, the increase in depression scores for the HL group over time is expected, given the natural course of subsyndromal depression. It is interesting to note that the depression scores between the MSC-T group and the control continued to diverge post program, even though the participants did not regularly attend booster sessions. This is not unexpected as it has been noted in other studies (Neff & Germer, 2013; Guo et al., 2020). It may be that learning self-compassion initiates a perspective shift that becomes clearer and more pronounced over time; in the months after the program is over, the individual becomes increasingly aware of the many times in their daily lives when they are self-critical, and in these moments, draws on self-compassion. This activation of one's self-compassion may then elicit less self-criticism or other negative self-relational processes, which is then linked with decreased depression.

Contrary to expectation, self-compassion scores increased by a similar amount in both groups. One possibility for this finding is that the HL curriculum indirectly overlapped with key aspects of the MSC-T curriculum. The developers and instructors of the HL attention-control intervention were careful to avoid any overlap in content between this course and MSC-T; in fact, instructors were told explicitly to avoid any mention of mindfulness or compassion. Nonetheless, it is possible that aspects of self-compassion were inadvertently conveyed or naturally emerged from engaging in group discussions about lifestyle topics. For example, as control group participants learned about healthy ways to engage in social media, or ways to manage academic stress, participants may have become more aware of their feelings around these topics and felt more connected to peers who also struggle in these areas despite the fact that discussions about feelings or about common humanity were not explicitly elicited.

As other examples, participants discussing how exercise (or lack thereof) impacts them physically and mentally, and sharing ideas on ways to increase their activity levels in daily life clearly offered insight on ways to take care of themselves (e.g., self-kindness). Also, when discussing academic stress, some participants agreed with one another about difficulties associated with the pressure to take demanding course loads, thus evoking common humanity. Common humanity is a natural outgrowth of group contexts and thus likely impossible to avoid completely. Peer groups, and the self-awareness and social connection that often ensues, may be a natural context for (at least some) mindfulness, common humanity, and self-kindness to emerge.

Interestingly, despite self-compassion scores increasing in the control group, on average, depression scores increased over time. This was unexpected, as previous work indicates depression and self-compassion are inversely related. Although the reasons for this result are unclear, it is plausible that the HL curriculum implicitly impacted some of the six individual components of self-compassion, leading to a rise in total self-compassion score, but without the same mental health benefits associated with explicit, holistic self-compassion training. Improvement in the individual components, however, may not have impacted depression symptoms as they did not function as an interactive, synergistic system designed to cultivate increases in the three compassionate components (mindfulness, common humanity, and self-kindness) and decreases in the three uncompassionate components (overidentification, isolation and self-criticism) of self-compassion (Neff, 2023b).

In addition to the need to consider control group modifications, there are several other limitations that can be addressed in future work. First, because this was a pilot examining feasibility and acceptability of two interventions for adolescents with subsyndromal depression, sample size was intentionally small; it also included primarily female-identifying White participants. A study with a larger, more heterogeneous sample is essential to confirm these results and expand generalizability. Additionally, the current study design does not allow examination of the impact of booster session attendance; in fact, findings suggest participants improved despite poor attendance. Future work in this area could examine if booster sessions are beneficial and for whom using techniques such as SMART (sequential, multiple assignment, randomized trials) (Dai & Shete, 2016). If boosters do prove beneficial, qualitative data could be used to examine how to improve

booster participation. Finally, future studies can explore subscale analysis of the individual components of the self-compassion scale in both the intervention and control groups to answer the question as to what aspects of self-compassion are responsible for the increase in self-compassion evidenced in this study.

Despite these limitations, the results of this study suggest that the MSC-T curriculum is a promising depression prevention program for youth with subsyndromal depression symptoms, as participation prevented progression to clinically significant depression compared to a credible, feasible and acceptable active control condition. MSC-T is considered more accessible than most therapeutic options because it can be offered in communities and school settings from a range of providers, not just psychologists (Finlay-Jones, 2023). Moreover, while self-compassion has many clinical applications (Gilbert & Proctor, 2006), MSC-T is suitable for use in non-clinical samples as well and importantly, does not carry the stigma of "mental illness" or the perceived pathology of "seeing a therapist". Given this flexibility, continued exploration of MSC-T to address the mental health needs of youth is warranted.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgements:

This work was made possible through the support and hard work of many, including biostatisticians Chirayath M Suchindran and Keturah Faurot, and research assistants Nandie Elhadidy, Michael Hearn, Zayne Dadressen, and Chloe Brown. Thank you to the clinical staff members who completed eligibility reviews and safety checks at the AHB Center for Behavioral Health and Wellness. We also greatly appreciate all our adolescent participants.

Ethics and Funding information:

This study was funded by a grant 1 R34 AT008822-01A1 from NCCIH/NIH. This study was approved by the UNC IRB, number 16-1864 and is listed on clinical trials number NCT03270943.

Data availability statement:

The data that support the findings of this study are available from Dr. Susan Gaylord gaylords@med.unc.edu upon reasonable request.

References

Alaie I, Philipson A, Ssegonja R, Copeland WE, Ramklint M, Bohman H, & Jonsson U (2022). Adolescent depression and adult labor market marginalization: A longitudinal cohort study. European Child & Adolescent Psychiatry, 31(11), 1799–1813. [PubMed: 34173065]

Anatale K, & Kelly S (2015). Factors influencing adolescent girls' sexual behavior: a secondary analysis of the 2011 youth risk behavior survey. Issues in Mental Health Nursing, 36(3), 217–221. [PubMed: 25897482]

Aycock DM, Hayat MJ, Helvig A, Dunbar SB, & Clark PC (2018). Essential considerations in developing attention control groups in behavioral research. Research in Nursing & Health, 41(3), 320–328. [PubMed: 29906317]

Barry CT, Loflin DC, & Doucette H (2015). Adolescent self-compassion: Associations with narcissism, self-esteem, aggression, and internalizing symptoms in at-risk males. Personality and Individual Differences, 77, 118–123.

Bates D, Mächler M, Bolker B, & Walker S (2015). Fitting linear mixed-effects models using lme4. Journal of Statistical Software.

Beardslee W, Gladstone T, Wright E, Cooper A (2003). A family based approach to the prevention of depressive symptoms in children at risk: Evidence of parental and child change. Pediatrics, 112,119–131.

Bluth K (2017). The self-compassion workbook for teens: Mindfulness and compassion skills to overcome self-criticism and embrace who you are. New Harbinger Publications.

Bluth K (2020). The self-compassionate teen: Mindfulness and compassion skills to conquer your critical inner voice. New Harbinger Publications.

Bluth K, & Blanton PW (2014). Mindfulness and self-compassion: Exploring pathways to adolescent emotional well-being. Journal of Child and Family Studies, 23(7), 1298–1309. [PubMed: 25328369]

Bluth K, Campo RA, Pruteanu-Malinici S, Reams A, Mullarkey M, & Broderick PC (2016). A school-based mindfulness pilot study for ethnically diverse at-risk adolescents. Mindfulness, 7, 90–104. [PubMed: 27034729]

Bluth K, & Eisenlohr-Moul TA (2017). Response to a mindful self-compassion intervention in teens: A within-person association of mindfulness, self-compassion, and emotional well-being outcomes. Journal of Adolescence, 57, 108–118. [PubMed: 28414965]

Bluth K, Gaylord SA, Campo RA, Mullarkey M, & Hobbs L (2016). Making Friends with Yourself: A mixed methods pilot study of a mindful self-compassion program for adolescents. Mindfulness, 7(2), 479–492. [PubMed: 27110301]

Bluth K, Lathren C, Clepper-Faith M, Larson LM, Ogunbamowo DO, & Pflum S (2023). Improving Mental Health Among Transgender Adolescents: Implementing Mindful Self-Compassion for Teens. Journal of Adolescent Research, 38, 271–302.

Borkovec TD, & Nau SD (1972). Credibility of analogue therapy rationales. Journal of Behavior Therapy & Experimental Psychiatry, 3, 257–260.

Burke PJ, Katz-Wise SL, Spalding A, & Shrier LA (2018). Intimate relationships and sexual behavior in young women with depression. Journal of Adolescent Health, 63(4), 429–434.

Chadi N, McMahon A, Vadnais M, Malboeuf-Hurtubise C, Djemli A, Dobkin PL, LaCroix J, Luu TM, & Haley N (2016). Mindfulness-based intervention for female adolescents with chronic pain: A pilot randomized trial. Journal of the Canadian Academy of Child and Adolescent Psychiatry, 25(3), 159. [PubMed: 27924146]

Clarke GN, Hornbrook M, Lynch F, Polen M, Gale J, Beardslee W, O'Connor E, & Seeley J (2001). A randomized trial of a group cognitive intervention for preventing depression in adolescent offspring of depressed parents. Archives of General Psychiatry, 58(12), 1127–1134. http://www.ncbi.nlm.nih.gov/pubmed/11735841 [PubMed: 11735841]

Clarke GN, & Lewinsohn P (1995). Instructor's Manual for the Adolescent Coping with Stress Course. Kaiser Permanente Center for Health Research. Retrieved February 7, 2023 from http://www.mentalhealthpromotion.net/resources/copingwithstress_therapistmanual.pdf

Clarke GN, Rohde P, Lewinsohn PM, Hops H, & Seeley JR (1999). Cognitive-behavioral treatment of adolescent depression: Efficacy of acute group treatment and booster sessions. Journal of the American Academy of Child & Adolescent Psychiatry, 38(3), 272–279. [PubMed: 10087688]

Clayborne ZM, Varin M, & Colman I (2019). Systematic review and meta-analysis: adolescent depression and long-term psychosocial outcomes. Journal of the American Academy of Child & Adolescent Psychiatry, 58(1), 72–79. [PubMed: 30577941]

Cunha M, Xavier A, & Castilho P (2016). Understanding self-compassion in adolescents: Validation study of the Self-Compassion Scale. Personality and Individual Differences, 93, 56–62.

Curry J (2014). Future directions in research on psychotherapy for adolescent depression. Journal of Clinical Child and Adolescent Psychology, 43(3),510–526. [PubMed: 24730421]

Dai T, & Shete S (2016). Time-varying SMART design and data analysis methods for evaluating adaptive intervention effects. BMC Medical Research Methodology, 16(1), 1–17. [PubMed: 26728979]

Diagnostic and Statistical Manual of Mental Disorders. (2013). (5th; DSM-5 ed.). American Psychiatric Association.

Egan SJ, Rees CS, Delalande J, Greene D, Fitzallen G, Brown S, Webb M, & Finlay-Jones A (2021). A review of self-compassion as an active ingredient in the prevention and treatment of anxiety and depression in young people. Administration and Policy in Mental Health and Mental Health Services Research, 1–19.

Feiss R, Dolinger SB, Merritt M, Reiche E, Martin K, Yanes JA, Thomas CM & Pangelinan M (2019). A systematic review and meta-analysis of school-based stress, anxiety, and depression prevention programs for adolescents. Journal of Youth and Adolescence, 48, 1668–1685. [PubMed: 31346924]

Fergusson DM, Boden JM, & Horwood LJ (2007). Recurrence of major depression in adolescence and early adulthood, and later mental health, educational and economic outcomes. British Journal of Psychiatry, 191, 335–342. 10.1192/bjp.bp.107.036079

Fergusson DM, Horwood LJ, Ridder EM, & Beautrais AL (2005). Subthreshold depression in adolescence and mental health outcomes in adulthood. Archives of General Psychiatry, 62, 66–72. 10.1001/archpsyc.62.1.66 [PubMed: 15630074]

Ferrari M, Hunt C, Harrysunker A, Abbott MJ, Beath AP, & Einstein DA (2019). Self-compassion interventions and psychosocial outcomes: A meta-analysis of RCTs. Mindfulness, 10(8), 1455–1473.

Finlay-Jones A (2017). The relevance of self-compassion as an intervention target in mood and anxiety disorders: A narrative review based on an emotion regulation framework. Clinical Psychologist, 21(2), 90–103. 10.1111/cp.12131

Finlay-Jones A, (2023). A house with many doors: Toward a more nuanced self-compassion intervention science, In Finlay-Jones A, Bluth K & K. Neff, K. (Eds.). Handbook of Self-Compassion, (pp. 433–453). Springer Nature.

Fletcher JM (2008). Adolescent depression: diagnosis, treatment, and educational attainment. Health Economics, 17(11), 1215–1235. 10.1002/hec.1319 [PubMed: 18157910]

Garber J (2006). Depression in children and adolescents: linking risk research and prevention. American Journal of Preventive Medicine, 31(6 Suppl 1), S104–125. 10.1016/j.amepre.2006.07.007 [PubMed: 17175406]

Garber J, Clarke GN, Weersing VR, Beardslee WR, Brent DA, Gladstone TRG, DeBar LL, Lynch FL, D'Angelo E, Hollon SD, Shamseddeen W, & Iyengar S (2009). Prevention of depression in at-risk adolescents: A randomized controlled trial. Journal of American Medical Association, 301,2215–2224.

Gilbert P & Proctor S (2006). Compassionate mind training for people with high shame and self-criticism: Overview and pilot study of a group therapy approach. Clinical Psychology and Psychotherapy, 13, 353–379.

Guo L, Zhang J, Mu L, & Ye Z (2020). Preventing postpartum depression with mindful self-compassion intervention: A randomized control study. The Journal of Nervous and Mental Disease, 208(2), 101–107. [PubMed: 31868776]

Horowitz JL, Garber J, Ciesla JA, Young J, Mufson L (2007). Prevention of depressive symptoms in adolescents: A randomized trial of cognitive– behavioral and interpersonal prevention programs. Journal of Consulting and Clinical Psychology, 75, 693–706. [PubMed: 17907851]

Irwin DE, Stucky B, Langer MM, Thissen D, DeWitt EM, Lai J, Varni JW, Yeatts K & DeWalt DA (2010). An item response analysis of the pediatric PROMIS anxiety and depressive symptoms scales. Quality of Life Research, 19, 595–607. [PubMed: 20213516]

Joosten DH, Nelemans SA, Meeus W, & Branje S (2022). Longitudinal associations between depressive symptoms and quality of romantic relationships in late adolescence. Journal of Youth and Adolescence, 1–15.

Kaushik A, Kostaki E, & Kyriakopoulos M (2016). The stigma of mental illness in children and adolescents: A systematic review. Psychiatry Research, 243, 469–494. [PubMed: 27517643]

Keenan-Miller D, Hammen CL, & Brennan PA (2007). Health outcomes related to early adolescent depression. Journal of Adolescent Health, 41, 256–262.

Kinser PA, & Robins JL (2013). Control group design: enhancing rigor in research of mind-body therapies for depression. Evidence-Based Complementary and Alternative Medicine, 1–10.

Kohut SA, Stinson J, Jelen A, & Ruskin D (2020). Feasibility and acceptability of a mindfulness-based group intervention for adolescents with inflammatory bowel disease. Journal of Clinical Psychology in Medical Settings, 27, 68–78. [PubMed: 31065861]

Krieger T, Berger T, & Grosse Holtforth M (2016). The relationship of self-compassion and depression: Cross-lagged panel analyses in depressed patients after outpatient therapy. Journal of Affective Disorders, 202, 39–45. [PubMed: 27253215]

Kuznetsova A, Brockhoff PB, & Christensen RH (2017). lmerTest package: tests in linear mixed effects models. Journal of Statistical Software, 82, 1–26.

Larsson B, Melin L, Lamminen M, & Ullstedt F (1987). A school-based treatment of chronic headaches in adolescents. Journal of Pediatric Psychology, 12(4), 553–566. [PubMed: 3323446]

Leeb RT, Bitsko RH, Radhakrishnan L, Martinez P, Njai R, & Holland KM (2020). Mental health–related emergency department visits among children aged< 18 years during the COVID-19 pandemic—United States, January 1–October 17, 2020. Morbidity and Mortality Weekly Report, 69(45), 1675. [PubMed: 33180751]

Lewinsohn PM, Solomon A, Seeley JR, & Zeiss A (2000). Clinical implications of subthreshold depressive symptoms. Journal of Abnormal Psychology, 109, 345–351. [PubMed: 10895574]

Lovato N, & Gradisar M (2014). A meta-analysis and model of the relationship between sleep and depression in adolescents: recommendations for future research and clinical practice. Sleep Medicine Reviews, 18(6), 521–529. [PubMed: 24857255]

Lovibond P, & Lovibond H (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with Beck Depressive and Anxiety Inventories. Behaviour Research and Therapy, 33, 335–343. 10.1016/0005-7967(94)00075-U [PubMed: 7726811]

MacBeth A, & Gumley A (2012). Exploring compassion: a meta-analysis of the association between self-compassion and psychopathology. Clinical Psychology Review, 32(6), 545–552. 10.1016/j.cpr.2012.06.00 [PubMed: 22796446]

March S, Spence SH, & Donovan CL (2008). The efficacy of an internet-based cognitive-behavioral therapy intervention for child anxiety disorders. Journal of Pediatric Psychology, 34(5), 474–487. [PubMed: 18794187]

Marsh IC, Chan SWY, & MacBeth A (2018). Self-compassion and Psychological Distress in Adolescents—a Meta-analysis. Mindfulness. 10.1007/s12671-017-0850-7

Mendelson T, Greenberg MT, Dariotis J, Gould L, Rhoades B, & Leaf P (2010). Feasibility and preliminary outcomes of a school-based mindfulness intervention for urban youth. Journal of Abnormal Child Psychology, 38, 985–994. [PubMed: 20440550]

Naicker K, Galambos NL, Zeng Y, Senthilselvan A, & Colman I (2013). Social, demographic, and health outcomes in the 10 years following adolescent depression. Journal of Adolescent Health, 52(5), 533–538. 10.1016/j.jadohealth.2012.12.016

Neff KD (2003). The development and validation of a scale to measure self-compassion. Self and Identity, 2, 223–250. 10.1080/15298860390209035

Neff K, (2023a). Self-compassion: Theory and measurement, In Finlay-Jones A, Bluth K & Neff K, K. (Eds.). Handbook of self-compassion, (pp.1–18). Springer Nature.

Neff KD (2023b). Self-compassion: Theory, method, research, and intervention. Annual Review of Psychology, 74,193–218.

Neff KD, Bluth K, Tóth-Király I, Davidson O, Knox MC, Williamson Z, & Costigan A (2021). Development and validation of the self-compassion scale for youth. Journal of Personality Assessment, 103(1), 92–105. [PubMed: 32125190]

Neff KD, & Germer CK (2013). A pilot study and randomized controlled trial of the mindful self-compassion program. Journal of Clinical Psychology, 69(1), 28–44. [PubMed: 23070875]

Neff KD, & McGehee P (2010). Self-compassion and psychological resilience among adolescents and young adults. Self and Identity, 9(3), 225–240.

Park H, Kim T, & Kim J (2023). Longitudinal pathways from adolescent depressive symptoms to cardiovascular disease risk in adulthood. Social Science & Medicine, 115657.

Protecting Youth Mental Health: The US Surgeon General's Advisory. (2021). Rockville, MD: United States.

Pullmer R, Chung J, Samson L, Balanji S, & Zaitsoff S (2019). A systematic review of the relation between self-compassion and depressive symptoms in adolescents. Journal of Adolescence, 74, 210–220. [PubMed: 31254780]

Racine N, McArthur BA, Cooke JE, Eirich R, Zhu J, & Madigan S (2021). Global prevalence of depressive and anxiety symptoms in children and adolescents during COVID-19: a meta-analysis. JAMA Pediatrics, 175(11), 1142–1150. [PubMed: 34369987]

Richardson LP, Davis R, Poulton R, McCauley E, Moffitt T, Caspi A, & Connell F (2003). A longitudinal evaluation of adolescent depression and adult obesity. Archives of Pediatric and Adolescent Medicine, 157, 739–745.

Richter A, Gilbert P, & McEwan K (2009). Development of an early memories of warmth and safeness scale and its relationship to psychopathology. Psychology and Psychotherapy: Theory, Research and Practice, 82, 171–184. 10.1348/147608308X395213

Rush AJ, Trivedi MH, Ibrahim HM, Carmody TJ, Arnow B, Klein DN, Markowitz JC, Ninan PT, Kornstein S, Manber R, Thase ME, Kocsis JH & Keller MB (2003). The 16-Item Quick Inventory of Depressive Symptomatology (QIDS), clinician rating (QIDS-C), and self-report (QIDS-SR): A psychometric evaluation in patients with chronic major depression. Biological Psychiatry, 54(5), 573–583. [PubMed: 12946886]

Schaffer D (2000). NIMH Diagnostic Interview Schedule for Children Version IV (NIMH DISC-IV): Description, differences from previous versions, and reliability of some common diagnoses. Journal of the American Academy of Child and Adolescent Psychiatry, 39, 28–38. [PubMed: 10638065]

Sibinga EM, Kerrigan D, Stewart M, Johnson K, Magyari T, & Ellen JM (2011). Mindfulness-based stress reduction for urban youth. Journal of Alternative and Complementary Medicine, 17(3), 213–218. 10.1089/acm.2009.0605 [PubMed: 21348798]

Sibinga EM, Stewart M, Magyari T, Welsh CK, Hutton N, & Ellen JM (2008). Mindfulness-based stress reduction for HIV-infected youth: a pilot study. Explore, 4(1), 36–37. 10.1016/j.explore.2007.10.002 [PubMed: 18194789]

Ssegonja R, Nystrand C, Feldman I, Sarkadi A, Langenskiöld S, & Jonsson U (2019). Indicated preventive interventions for depression in children and adolescents: A meta-analysis and meta-regression. Preventive Medicine, 118, 7–15. [PubMed: 30287331]

Stice E, Burton, Bearman SK, Rohde P. (2006). Randomized trial of a brief depression prevention program: An elusive search for a psychosocial placebo control condition. Behavior Research and Therapy. 45, 863–876.

Stice E, Shaw H, Bohon C, Marti CN, Rohde P (2009). A meta-analytic review of depression prevention programs for children and adolescents: Factors that predict magnitude of intervention effects. Journal of Consulting and Clinical Psychology. 77(3),486–503. [PubMed: 19485590]

Tanaka M, Wekerle C, Schmuck ML, Paglia-Boak A, & MAP Research Team. (2011). The linkages among childhood maltreatment, adolescent mental health, and self-compassion in child welfare adolescents. Child Abuse & Neglect, 35(10), 887–898. [PubMed: 22018519]

Trivedi MH, Rush A, Ibrahim H, Carmody T, Biggs M, Suppes T, Crismon ML, Shores-Wilson K, Toprac MG, Dennehy E, Witte B, & Kashner TM (2004). The Inventory of Depressive Symptomatology, Clinician Rating (IDS-C) and Self-Report (IDS-SR), and the Quick Inventory of Depressive Symptomatology, Clinician Rating (QIDS-C) and Self-Report (QIDS-SR) in public sector patients with mood disorders: a psychometric evaluation. Psychological Medicine, 34(1), 73–82. [PubMed: 14971628]

Uchida M, Hirshfeld-Becker D, DiSalvo M, Rosenbaum J, Henin A, Green A, & Biederman J (2021). Further evidence that subsyndromal manifestations of depression in childhood predict the subsequent development of major depression: A replication study in a 10 year longitudinally assessed sample. Journal of Affective Disorders, 287, 101–106. [PubMed: 33774317]

Van Buuren S, & Groothuis-Oudshoorn K (2011). mice: Multivariate imputation by chained equations in R. Journal of Statistical Software, 45, 1–67.

Varni JW, Magnus B, Stucky BD, Liu Y, Quinn H, Thissen D, Gross HE, Huang I, & DeWalt DA (2014). Psychometric properties of the PROMIS® pediatric scales: precision, stability, and comparison of different scoring and administration options. Quality of Life Research, 23, 1233–1243. [PubMed: 24085345]

Young JF, Mufson L, & Davies M (2006). Efficacy of interpersonal psychotherapy-adolescent skills training: an indicated preventive intervention for depression. Journal of Child Psychology and Psychiatry, 47(12), 1254–1262. [PubMed: 17176380]

Youth Risk Behavior Survey: Data Summary and Trends Report 2011–2021. (2023). National Center for HIV, Viral Hepatitis, STD, and TB Prevention, Division of Adolescent and School Health.

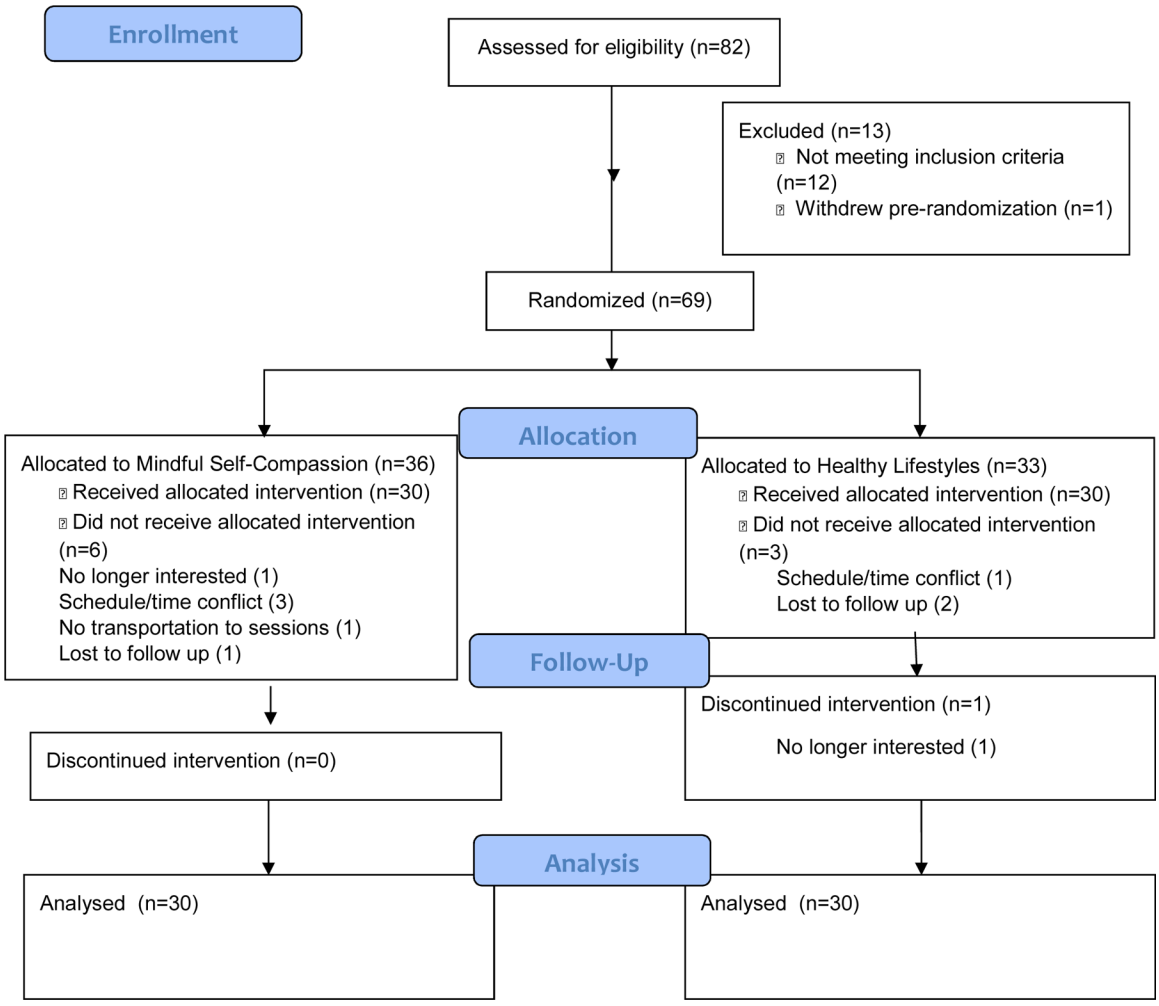

Figure 1.
Consort diagram

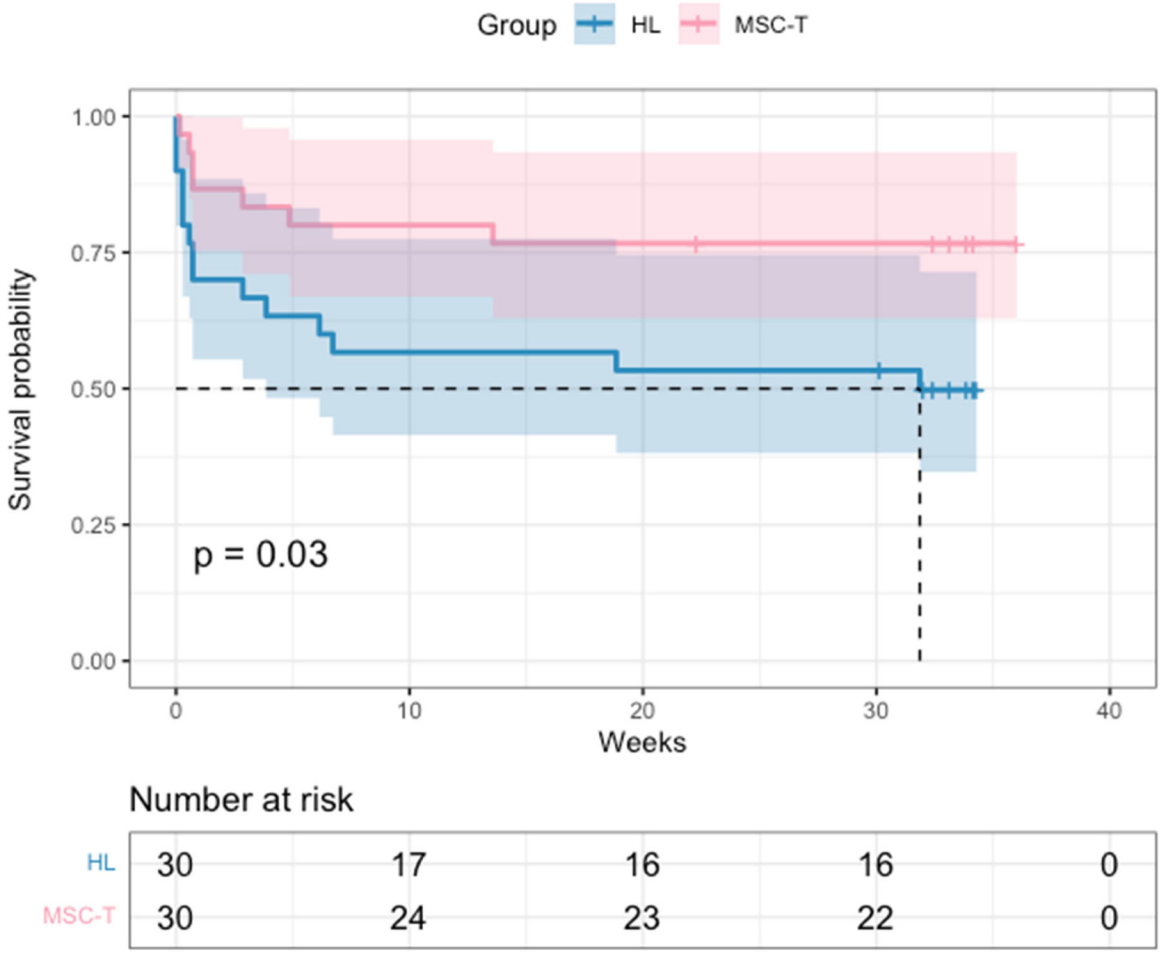

Figure 2. Kaplan-Meir plot of time to incident depression using PROMIS depression scale, by group.

Note. The events are defined as the incident of first depression, which was diagnosed using the PROMIS depression scale. The blue line indicates the MSC-T group, and the red line indicates the HL control group.

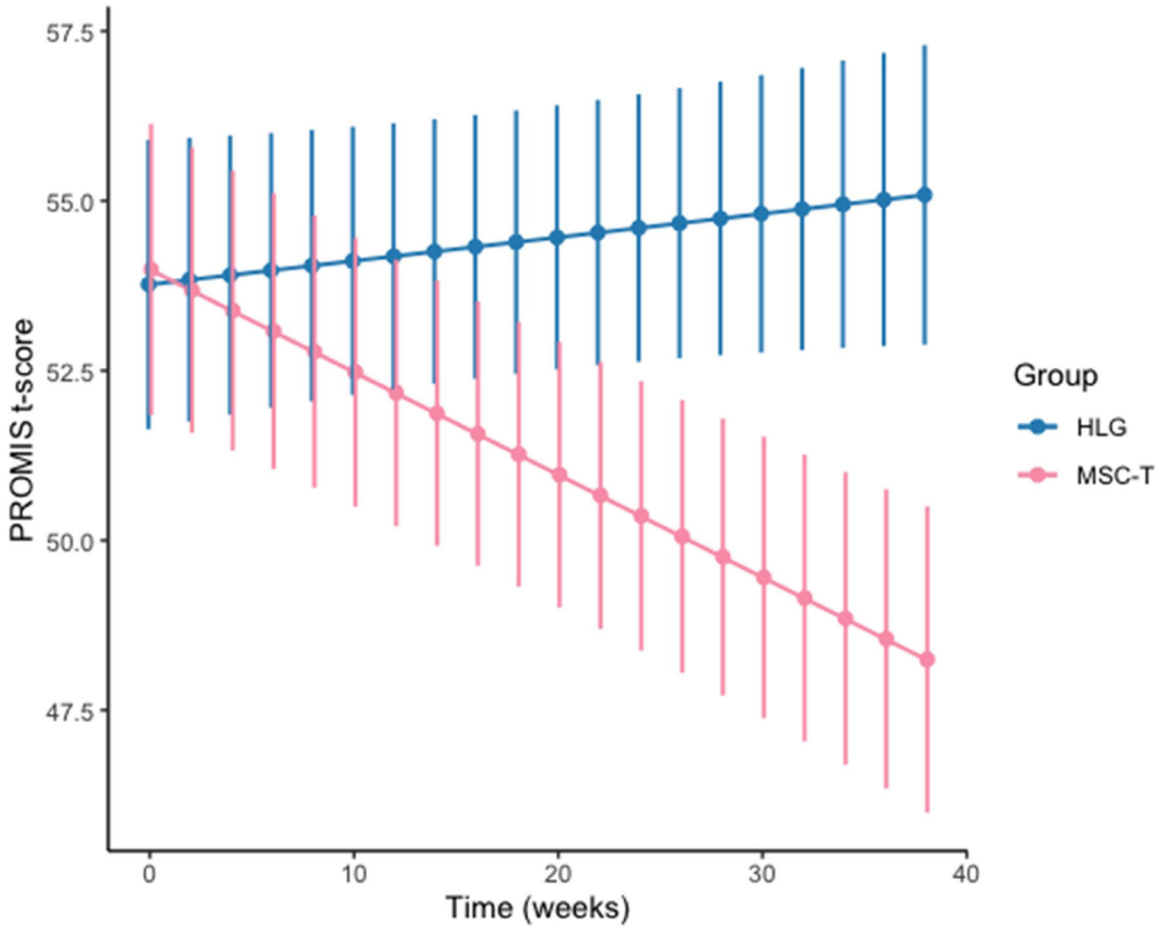

Figure 3.

A mixed-effect model predicted change in PROMIS depression t-score over time for the MSC-T and the HL group

Table 1.

Demographic Information

	MSC-T	HL
Age (mean, SD)	15.81 (1.08)	15.60 (0.93)
Race		
White	60%	70%
Black	10%	7%
Asian	13%	10%
More than one race	10%	10%
Prefer not to answer	3%	3%
Armenian	3%	N/A
Ethnicity		
Hispanic	7%	13%
Not Hispanic	90%	83%
Sex (female)	70%	70%

Note. There were no significant between-group difference in age, t = −0.79599, df = 56.792, p-value = 0.4294, race, $\chi 2(df = 3) = 0.68$, p = 0.88, and ethnicity, $\chi 2(df = 2) = 0.74$, p = 0.69.

Table 2.

Mindful Self-Compassion for Teens (MSC-T) Intervention Group

Session 1: Discovering Mindful Self-Compassion	Participants are introduced to the concepts of mindfulness and self-compassion and participate in a guided meditation. Through a hands-on exercise, participants become familiar with the concept that we treat ourselves more harshly than we treat our friends in times of difficulty.
Session 2: Paying Attention on Purpose	The concept of mindfulness is discussed. Participants experience mindfulness through sound meditation, eating meditation, and a body scan guided practice.
Session 3: Kindness	The concept of kindness is introduced along with practices to cultivate kindness towards “someone who makes you smile” as well as to oneself.
Session 4: Self-Compassion	Participants engage in an exercise which elucidates how to motivate oneself with compassion rather than with self-criticism. Music meditation is introduced.
Session 5: Self-Compassion vs. Self-Esteem	The similarity and differences of these two ways of relating to oneself are presented. The concept of common humanity is illustrated through two separate exercises.
Session 6: Living Deeply	Adolescents participate in an exercise which allows them to become more familiar with their core values, as well as with obstacles that may prevent them from living in accord with their core values.
Session 7: Managing Difficult Emotions	Adolescents are taught specific tools to deal with particularly emotionally challenging situations, i.e., those that potentially could increase anxiety or depression.
Session 8: Embracing Your Life	The focus of this session is on how to integrate savoring, gratitude and self-appreciation practices into daily life. Wrap-up of the program also includes writing a letter to oneself which includes what they would like to remember about the program.

Bluth, K. (2017; 2020).

Table 3.

Healthy Lifestyles Control Group

Session 1: Sleep hygiene	The science of sleep and its effects on brain health. Participants watched brief video presentations, followed by discussions on their own sleep habits and their experiences of sleep's impact on their well-being.
Session 2: Nutrition	Eating well for a healthy body and healthy mind. Participants received didactic instruction on the role of nutrition on maintaining a healthy mind and body and participated in hands-on activities involving preparing healthful foods and beverages.
Session 3: Exercise	Getting moving to feel better. Participants received didactic instruction on the role of exercise in enhancing emotional and physical well-being and learned and engaged in dance-related activities from various decades.
Session 4: Academic Stress	Overcoming School Stress. Participants discussed stress, its role in health and illness, and explored healthy strategies for overcoming school-related stress.
Session 5: Social Media	Instagram, Twitter and beyond: How to manage this in your life without its overtaking your life. Participants watched a brief video presentation on the role of social media in health, discussed their own habits related to social media, and explored ways to manage use of social media in a healthy way.
Session 6: Creativity	Shaping your Environment. Participants explored the role of creativity in mental and physical health, engaged in creative activities and discussed personal creative endeavors.
Session 7: Diversity	Exploring your Identity. Participants watched a brief video and explored the dynamics of diversity, via games and discussion.
Session 8: Community Service	Engaged Citizenship. Participants discussed the role of community service in enhancing mental and physical well-being and worked together to explore models for community engagement activities.

Table 4.

Mixed-effect model results on depression (PROMIS) and self-compassion

Outcomes	Beta	95% CI	z	p-value
PROMIS t-score				
Time	0.02	[−0.05, 0.08]	0.43	0.67
Baseline group (MSC-T)	0.20	[−2.89, 3.29]	0.13	0.90
Time × Group (MSC-T)	−0.17	[−0.26, −0.08]	−3.63	<.001
Self-compassion				
Time	0.01	[0.00, 0.02]	2.40	0.02
Baseline group (MSC-T)	0.03	[−0.32, 0.39]	0.18	0.86
Time × Group (MSC-T)	0.00	[−0.02, 0.01]	−0.66	0.51