Implementation of Dialectical Behavioral Therapy for Adolescents (DBT-A) Skills Group in High Schools for At-Risk Youth: Going 4 Goals Protocol

Tamika Zapolski (✉ tzapolsk@iupui.edu)

Indiana University Purdue University at Indianapolis <https://orcid.org/0000-0003-0675-560X>

MacKenzie Whitener

Indiana University Purdue University at Indianapolis

Shirin Khazvand

Indiana University Purdue University at Indianapolis

Queenisha Crichlow

University of Alabama at Birmingham School of Social and Behavioral Sciences: The University of Alabama at Birmingham College of Arts and Sciences

Rebecca Revilla

UA: The University of Alabama

Eduardo Salgado

Indiana University Purdue University at Indianapolis

Matthew C. Aasima

Indiana University School of Medicine

Melissa A. Cyders

Indiana University Purdue University at Indianapolis

Michelle Salyers

Indiana University Purdue University at Indianapolis

Wei Wu

Indiana University Purdue University at Indianapolis

Study Protocol

Keywords: dialectical behavioral therapy, adolescents, high-school, intervention

Posted Date: May 6th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-482308/v1>

License: This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Adolescence is a developmental period marked by engaging in risk-taking behaviors, with higher risk among youth who are impulsive or emotionally dysregulated. Thus, interventions that teach skills to reduce the risk for negative outcomes as a consequence of dysregulation are needed. Social and Emotional Learning (SEL) programs have been developed to address both adolescent emotion dysregulation and risk-taking behaviors. However, current programs have mostly been implemented among younger youth and have rarely been empirically evaluated for their effectiveness among high school students. This current study outlines the implementation of a SEL intervention titled “Going 4 Goals,” which is a 9 session adaptation of the Dialectical Behavioral Therapy for Adolescents (DBT-A) program for schools delivered to at-risk high school students in a school setting. The primary outcomes of the study are to test whether participating in the skills group intervention produces significant increases in the core DBT-A skills of mindfulness, emotion regulation, distress tolerance, and interpersonal effectiveness while also producing significant decreases in substance use and risky behaviors. These primary outcomes are based on changes in participant scores between baseline and post-intervention, as well as follow-ups at 1, 3, and 6 months in comparison to a control group of youth who are participating in the school’s health curriculum at the same time points. A secondary objective of this study is to also examine the acceptability, facilitators and barriers of the intervention through qualitative interviews with intervention participants and school staff. The current paper describes the protocol of the 9 session school-based adaptation of the DBT-A intervention and discussion of the strengths and limitations of the study, as well as future directions.

Introduction

Adolescence is a developmental time period that is characterized by an increase in risk-taking behavior (Figner & Weber, 2011; Gardner & Steinberg, 2005; Steinberg, 2004) manifested in several areas, including reckless driving, unprotected sexual behavior, and substance use (Boyer, 2006; Steinberg, 2007; Maslowsky et al., 2019). Although an increase in some risk-taking behaviors is common among adolescents, addressing engagement in such behaviors is warranted given that they are associated with the leading causes of death for adolescents (e.g., injury deaths from motor vehicle crashes, firearms, and suffocation; Cunningham, Walton, & Carter, 2018). Additionally, adolescents who experience higher emotional dysregulation and impulsivity are especially vulnerable to negative health outcomes from engagement in risky behaviors (Bjork & Pardini, 2015; Wills et al., 2016).

Social and Emotional Learning (SEL) programs have been developed to address both adolescent emotion dysregulation and risk-taking behaviors, primarily within school settings (Greenberg et al., 2003; Dowling, Simpkin, & Barry, 2019). The core components of SEL programs focus on improving social skills, identifying others’ feelings, identifying one’s own feelings, and behavioral coping skills/relaxation (Lawson et al., 2019) and have been associated with decreases in externalizing behaviors among youth (Snyder et al., 2010; Durlak et al., 2011). Despite the clear benefits that SEL programs to improve health outcomes for youth across development, research on the implementation of SEL programs have been

primarily conducted among younger youth (e.g., in elementary or middle school; Durlak et al., 2011) with limited research testing the efficacy of SEL programs among older youth in high school settings (Williamson et al., 2015). Moreover, there is limited empirical evidence on the efficacy of SEL programs as targeted interventions (also referred to as Tier 2 interventions) for adolescents who are experiencing social, emotional, or behavioral problems and may be at an increased risk for negative health outcomes. This body of research is also limited in its reach, with the majority of the evidence on the efficacy of Tier 2 interventions among at-risk youth conducted among younger youth (Blewitt et al., 2019). Thus, there is a gap in the literature on the efficacy of Tier 2 SEL interventions for older at-risk adolescents.

An intervention that has promise as an effective Tier 2 intervention for at-risk youth within high schools is Dialectical Behavioral Therapy (DBT). DBT was originally developed by Marsha Linehan to treat chronically suicidal adults, many of whom were diagnosed with borderline personality disorder (Linehan, 1993). DBT utilizes cognitive-behavioral and mindfulness techniques to address difficulties in four specific areas: distress tolerance, emotion regulation, and interpersonal effectiveness, and has been proven to be effective at treating a number of mental disorders (Linehan, 1993; MacPherson et al., 2013). Due to the success of the intervention among adults, adaptations of DBT were created for adolescents, particularly those with similar clinical symptoms or had difficulties with emotional dysregulation (MacPherson et al., 2013; Mazza et al., 2016; Mazza & Dexter-Mazza, 2019; Rathus & Miller, 2015). The format of both DBT and DBT-A consist of individual therapy and a skills group component, however DBT-A differs from DBT in that some content is adapted to be developmentally appropriate for youth and the length of treatment is reduced from 1 year to 16 weeks (MacPherson et al., 2013). Outcome data for DBT-A has demonstrated effectiveness of the intervention in treating a variety of adolescent mental and behavioral health conditions, including suicidality, emotional dysregulation, depression, and anger across a variety of clinical settings, including correctional facilities, residential in-patient, and day treatment programs (e.g., Cook & Gorraiz, 2016; MacPherson et al., 2013; McCredie et al., 2017). However, far less research has been conducted examining the efficacy of DBT-A in non-clinical settings, such as school settings. To our knowledge, only four studies have been published, with three of the studies conducted among high school youth. It is also important to note that all four studies have further adapted the DBT/DBT-A protocol to only include the group skills component and have modified the length of treatment to 6–22 sessions over the course of 4–22 weeks.

The first study was conducted by Ricard, Lerma, and Heard (2013) who adapted the original DBT skills group protocol created by Linehan (1993) to address behavioral distress needs of youth at a Disciplinary Alternative Education Program (DAEP). The protocol included 8–10 group sessions lasting 40–45 minutes that occurred twice a week for four weeks. Their study included 125 students aged 6–18 who primarily identified as Hispanic. Findings indicated that participation in the group was associated with reductions in behavioral distress when compared to youth who did not receive the intervention (Ricard et al., 2013). A second study by Zapolski and Smith (2017) also found promising results for at-risk middle-school youth. Similar to the Ricard et al. (2013) study, Zapolski and Smith adapted the original DBT skills group for adults (Linehan, 1993) to a 9 session skills group protocol for middle-school youth. Among the 53 students (majority in seventh grade, mean age = 12.7) who participated in the group, findings indicated

that the intervention was effective in decreasing self-reported engagement in risky health behaviors, as well as intentions to engage in future risky behaviors. Moreover, these findings were more pronounced among youth who reported higher impulsivity scores (Zapolski & Smith, 2017). A third study published by Flynn and colleagues (2018) differs from the first two in that it was conducted outside the United States, in Ireland, and utilized the DBT-A manual created specifically for schools (DBT-A; Mazza et al., 2016). Moreover, the researchers adapted the DBT-A program to delivered over the course of 22-weeks rather than 30-weeks, as originally proposed by Mazza and colleagues. Positive outcomes were found, such that among their sample of 72 girls aged 15–16, participation in the group intervention was associated with significant improvements in emotional distress symptoms and internalizing problems compared to a control group of youth who did not receive the intervention (Flynn et al., 2018).

Although promising data exists based on the studies cited above, there have also been mixed findings. Burckhardt et al. (2018) adapted the original DBT protocol for adults (Linehan, 1993) to a 6 session skills group, with each session lasting for 50 minutes. Results indicated among their sample of 50 youth aged 14–16, that participation in the intervention was associated with small *increases* in anger, symptoms of anxiety, and depression based on both the post-intervention and 6-month follow up assessments. The researchers hypothesized that this finding could be due to the focus on mindfulness in DBT and the ability to “open up,” which may result in greater awareness, and thus reporting of symptoms of anxiety and depression. Burckhardt et al. (2018) also found that the control group, which were youth who attended usual classes that involved learning material regarding future careers, had better scores of emotion regulation compared to the intervention group. However, some positive findings were observed for the intervention group based on qualitative interviews conducted amongst participants, such that 74% of participants reported positive benefits of the intervention, including being able to better regulate their emotions.

Objectives

In summary, despite the clear benefits of SEL programs for adolescents at reducing risk for engagement in risk-taking health behaviors, much of the existing empirical support for SEL programs is based on evidence among younger youth and has rarely been tested as a Tier II intervention targeting youth who are at greater risk for experiencing adverse health outcomes. Utilizing Dialectical Behavioral Therapy for Adolescents (DBT-A) has the ability to address these gaps by providing an evidence-based intervention that shows promise at addressing risk-taking behavior among older at-risk youth in school settings. However, research implementing DBT-A in schools is limited with more empirical support on its efficacy needed.

For the current study, we aim to fill this critically important research and clinical gap by implementing a 9 session adaptation of the DBT-A program for schools (Mazza et al., 2016), titled “Going 4 Goals” within two public high schools for at-risk youth identified by school staff. The primary outcomes of the study are to test whether participating in the skills group intervention produces significant increases in the core

DBT-A skills (i.e., mindfulness, emotion regulation, distress tolerance, and interpersonal effectiveness) and significant decreases in substance use and risky behaviors. These primary outcomes are based on changes in participant scores between baseline and subsequent assessments at post-intervention, 1, 3, 6 month follow-ups in comparison to a control group of youth who are participating in the school's health curriculum at the same time points. A secondary objective of this study is to also examine the acceptability, facilitators, and barriers of the intervention through qualitative interviews with the intervention participants and school staff. The current paper describes the protocol of the 9 session school-based adaptation of the DBT-A intervention.

Methods

Study Design Overview

A mixed-method design is being used to explore the implementation and efficacy of the school-based DBT-A skills group, entitled Going 4 Goals, for at-risk high school youth. Youth are identified by school staff to participate in the skills group, which is held during school hours at local high schools and occur during non-core instructional class periods. A passive consent and active assent procedure is being used, with all eligible participants included in the intervention groups. Control participants are also be used to compare outcomes. Control students are from the health classes at the school where the intervention is taking place. All participants (intervention and control) take a quantitative survey at five timepoints (baseline, post-intervention (i.e., approximately 9 weeks after baseline), 1, 3, and 6 months post-intervention on paper or electronically through Qualtrics, a secure research survey software provided through the university. The survey includes measures to evaluate the core skills of the DBT-A program: emotion dysregulation, distress tolerance, mindfulness, and interpersonal effectiveness, and well as other key study variables, including impulsivity, substance use, and risk-taking behaviors. At the completion of each 9 session intervention program, participants and school staff are asked to participate in a qualitative interview approximately 1 month post-intervention to understand facilitators and barriers to the program. Figure 1 illustrates the implementation timeline. More details regarding the methodology of the study protocol is provided below.

Study Recruitment

The PI and the project manager reached out to several schools in the Indianapolis area, to inquire of the school's interests to partner in implementing the Going 4 Goals program at their school. Two schools agreed to implement the intervention at their schools. Both schools are diverse, having high rates of free or discounted lunch recipients (76% and 50.1%, respectively) and a median household income of \$49,175 and \$62,829, respectively. Both schools are also diverse in relation to race/ethnicity, with 70% and 69%, respectively, of the students identifying as non-White within each school. Intervention participants are identified by school staff, based on who the school staff deem as either "at-risk" (e.g., prior school-related drug offense, conduct problems, engagement in risky health behaviors or school fights, or had in-school or out-of-school suspension) or believe could benefit from learning the core DBT-A skills (i.e., mindfulness,

emotion regulation, distress tolerance, interpersonal effectiveness). The most common identification measures used by schools are (a) teacher recommendation based on class attendance and student behavior in class and (b) guidance counselor recommendation based on student behavior referral record (i.e., number of detentions, suspensions, or expulsions on student's record), attendance record, or known substance use.

Consent/Assent

Parent/guardian approval is being used based on a passive parent/guardian consent process. A letter is sent to the identified youth's legal guardian on behalf of the school and the research team, indicating that their child has the option to participate in a group that aims to reduce risk for substance use and other risky health behaviors by teaching skills to help manage emotions, stress, and interpersonal conflicts. The letter describing the study's purpose, risks, benefits, and inclusion/exclusion criteria (i.e., student within the school, able to adequately speak, understand, and read English and are not concurrently receiving mental health services for the duration of the intervention program) is sent to the guardian through the U.S. mail and/or sent home by the school administration with each student. The legal guardian is asked to sign and return the bottom of the letter if they did not want their child to participate in the intervention. Guardians are given two weeks to return the passive consent form. After the two-week period for guardians to return consent forms has passed, all youth who are still eligible are asked to attend an information session regarding the intervention group during school hours. A brief overview of the intervention is provided, and the youth who wish to participate sign assent forms and complete a survey assessing baseline measurements of the study outcome variables. Participants are also informed about the opportunity to complete a qualitative interview after completion of the skills group to understand facilitators and barriers of implementation. For participants who wish to participate in the interviews, a new assent form is provided and signed by participants at the end of the intervention in order to record and transcribe the interviews.

Control participants complete a similar consent/assent process. A consent form is sent home to their parent/guardian with a two-week window to return the form to the school before the youth are given the opportunity to assent to participate in the study. Those youth who provided consent are then provide complete the survey to complete at school during their health class.

Intervention Procedures- Going 4 Goals

Youth who participate in the Going 4 Goals group intervention attend 9 sessions conducted once a week, during school hours, lasting for approximately 40 minutes (i.e., one class period). Each session begins with a mindfulness exercise and a didactic period in which skills related to emotion regulation, distress tolerance, interpersonal effectiveness, and mindfulness taken directly from the DBT-A manual are taught. There is also time incorporated within each session for active participation from the youth, with at-home practice assigned at the end of each session. See Table 1 for complete session overview and objectives.

Table 1. Going 4 Goals Session Overview

Session	Session Objectives
Session 1: Introduction	<ul style="list-style-type: none"> · Give students an overview of the program and its purpose · Present the rewards system to the students for attainment of each goal · Complete pre-treatment survey · Mindfulness introduction
Session 2: Mindfulness Skills	<ul style="list-style-type: none"> · Teach students how to be aware of their emotions without necessarily changing them
Session 3: Understanding Emotions	<ul style="list-style-type: none"> · Teach students how to observe and describe emotions · Help students understand the function of emotions
Session 4: Reducing Vulnerability to Extreme Emotions	<ul style="list-style-type: none"> · Teach students the importance of taking care of their body and its influence on emotional reactivity (i.e., balanced eating, adequate sleep, exercise, etc.)
Session 5: Managing Emotions/Opposite Action	<ul style="list-style-type: none"> · Teach students how to experience emotions without immediate mood based action · Teach students how to change or reduce the intensity of their emotions through opposite action
Session 6: Distress Tolerance/Relaxation	<ul style="list-style-type: none"> · Teach students strategies to help manage mood during particularly difficult emotional periods (e.g., getting bad grade) · Teach relaxation training to students to help reduce intense negative emotions
Session 7: Perspective Taking, Problem Solving, & Pros/Cons	<ul style="list-style-type: none"> · Teach students how to obtain a more objective assessment of distressing situations
Session 8: Relating to Others	<ul style="list-style-type: none"> · Thinking mistakes · Discuss validation of others and self-validation · Teach students how to best communicate with others, so that can

	either: a) maintain relationships and reduce conflict, b) get what they want or say no, and/or c) keep their self-respect
Session 9: Review of Skills	<ul style="list-style-type: none"> · Review skills taught over the course of the program with application exercise · Complete post-treatment survey

Control/Treatment as Usual (TAU)

Participants assigned to the control group or treatment as usual (TAU) are all enrolled in a health education class at their school, which is a state requirement for all high school students. These students do not receive any Going 4 Goals programming.

Data Collection Procedures

For the intervention participants, quantitative surveys are completed during the first meeting of the Going 4 Goals program as a baseline measure. The surveys are completed again at the end of the 9th session, and at 1, 3 and 6 month follow-ups. Additionally, during the first group session, each participant sets both an academic and personal goal with three smaller tasks to reach the goal using the SMART (i.e., specific, measurable, attractive, realistic, and timely) framework (Doran, 1981). These goals are later revisited in session five and session nine where progress is self-reported. For control participants, the same quantitative surveys are collected in the health education class in the same school the intervention participants attend, using the same timeline (baseline, approximately 9-weeks after the baseline assessment, and at 1, 3, and 6 month follow-ups). A snack and pen are given to each participant as an incentive for completing the baseline and post-treatment surveys. For the follow-up surveys, all participants receive monetary compensation in the form of gift cards for each completed survey (\$10 for 1 month, \$15 for 3 month, and \$20 for 6 month follow-up).

Qualitative interviews are also conducted with the intervention participants and school staff, which occur either in-person or on the phone approximately 1 month post-treatment, to assess the impact of the program and facilitators and barriers of implementing the intervention. Interviews are conducted by trained research staff, with steps taken to reduce the likelihood that the group leaders are conducting interviews with students in their own groups. The interviews last approximately 30 minutes. Youth participants receive a \$10 gift card for completing the interview and school staff receive a \$25 gift card.

Measures

Quantitative Measures

Demographics. Demographic information is collected during each data collection, starting at baseline. Participants are asked to report their age, gender identity, race, ethnicity, primary spoken language, grade in school, and mental health diagnoses (if any).

Emotion Dysregulation. The Emotion Dysregulation Scale short version (EDS-Short; Powers et al., 2015) is a 12-item instrument that is used to examine emotional experience, cognition, and behavior. The scale consists of items that are scored on a 7-point **Likert scale** ranging from 1 (*not true*) to 7 (*very true*) specific to each aspect, including emotional experiencing (e.g., “Emotions overwhelm me”), cognition (e.g., “When I’m upset, everything feels like a disaster or crisis”), and behavior (e.g., “When my emotions are strong, I often make bad decisions”). The internal consistency has been shown to be high for each subscale ($\alpha=0.93-0.95$; Powers et al., 2015).

Impulsivity. The UPPS-P Impulsive Behavior Scale modified for children (UPPS-PC; Zapolski et al., 2010) is used to measure impulsivity with five 8-item subscales measuring separate impulsivity-related traits: negative urgency, positive urgency, lack of perseverance, lack of premeditation, and sensation seeking. Example items of each scale include: negative urgency (e.g., “If I feel like doing something, I tend to do it, even if it’s bad.”), positive urgency (e.g., “When I am in a great mood, I tend to do things that could cause me problems.”), lack of perseverance (e.g., “I finish what I start.”), lack of premeditation (e.g., “I tend to stop and think before doing things.”), and sensation seeking (e.g., “I like new, thrilling things to happen”). Participants responded to items on each subscale on a 4-point Likert scale, 1 (*not at all like me*), 2 (*not like me*), 3 (*somewhat like me*), and 4 (*very much like me*), with items coded so that higher scores indicate more impulsive tendencies. Internal consistency has been shown to be high in previous research among youth ($\alpha = 0.81-0.90$; Zapolski et al., 2010).

Substance Use. Substance Use History measure is adapted from items included in various national studies conducted among youth (e.g., Monitoring the Future, YRBSS), and consists of 9 items and was used to evaluate substance use in the past 30 days. Participants were asked to indicate how many days they have used the substance in the last month (0, 1-2, 3-5, 6-9, 10-19, 20-29, every day). Substances evaluated were cigarettes (two items: smoked at all and smoked half a pack or more), smokeless tobacco, alcohol (two items: had at least one drink and had five or more drinks in a row), cannabis, inhalants, other drugs (LSD, cocaine, MDMA, etc.), and e-cigarettes.

Distress Tolerance. The Distress Tolerance Scale (DTS; Simons et al., 2005) consists of 15 items that measured self-evaluations and expectations of experiencing negative emotional states. Example items include “My feelings of distress are so intense that they completely take over,” and “I’ll do anything to avoid feeling distressed or upset.” Items were rated on a 5-point scale, 5 (*strongly disagree*), 4 (*mildly disagree*), 3 (*agree and disagree equally*), 2 (*mildly agree*), 1 (*strongly agree*), with higher scores indicating higher distress tolerance. The DTS has been demonstrated to have high internal consistency ($\alpha = 0.89$; Simons et al., 2005).

Mindfulness. The Philadelphia Mindfulness Scale (PHLMS; Cardaciotto et al., 2008) is used to measure key constituents of mindfulness, present-moment awareness (e.g., “I am aware of what thoughts are passing through my mind”) and acceptance (e.g. “There are aspects of myself I don’t want to think about”). It is comprised of 20 items that are rated on a 5-point scale: 5 (*very often*), 4 (*often*), 3 (*sometimes*), 2 (*rarely*), 1 (*never*). Higher scores on the PHLMS Awareness subscale are associated with

higher mindful attention/awareness, while higher scores on the PHLMS Acceptance subscale are associated with less thought suppression and rumination. The PHLMS has shown good internal consistency across clinical and non-clinical samples ($\alpha = .075-.91$; Cardaciotto et al., 2008).

Interpersonal Effectiveness. The Peer Conflict Scale-Youth (PCS-Short; Russell, 2014) is used as a proxy for interpersonal effectiveness, as it assesses reactive and proactive aggression. The measure consists of 20 items: 10 items examining proactive aggression, both proactive overt items (e.g., “I start fights to get what I want”) and proactive relational items (e.g., “I gossip about others to become popular”), and 10 items examining reactive overt (e.g., “When someone hurts me, I end up getting into a fight”) and relational aggression (e.g., “If others make me mad, I tell their secrets”). Items are rated along a 4-point Likert scale, 0 (*not at all true*), 1 (*somewhat true*), 2 (*very true*), 3 (*definitely true*). Previous work has established high internal consistency ($\alpha = .93$; Pechorro, Russell, Ayala-Nunes, Gonçalves, & Nunes, 2018).

Risky Behaviors. The Mood-Based Questionnaire-Children (MBQ-C; Zapolski et al., 2010), is a self-report measure that assesses lifetime endorsement and current likelihood to engage in 24 risky behaviors while being in either an unusually negative mood or an unusually positive mood. Lifetime endorsement is measured on a dichotomous, yes-no scale. Likelihood to engage in risky behaviors is measured on a 5-point Likert scale, with 1 (*not at all*), 3 (*maybe*) and 5 (*will definitely try*). Behaviors assessed on the measure include drank alcohol, broke the law, smoked a cigarette or cigar, kissed someone romantically, urinated outside, shoplifted, started a fight, trespassed, cheated on a test, disobeyed your parent. In previous research with adolescents, there has been good evidence of the reliability of the MBQ-C ($\alpha = .85-.92$, Zapolski & Smith, 2017). For the current study three modifications were made. First the mood component was removed from the instructions, thus the measure assesses for endorsement of likelihood to engage in the risky behavior regardless of mood state. Second, the timeframe was modified to assess for risk-taking within the past month rather than lifetime endorsement. Third, an item was added to the measure to assess for cannabis/marijuana use, which was not included in the original measure.

SMART Goal Tracking. One of the components of Going 4 Goals is creating and tracking SMART goals. Intervention participants are taught that SMART goals should be specific, measurable, attractive, realistic, and timely. Group leaders assist participants in creating one personal and one academic SMART goal to work on throughout their time in the program, each with three smaller tasks that would help the participant reach their overall goal. Participants then rate themselves on a scale of 1-10 indicating their progress toward reaching their goal, with 10 indicating goal attainment. Participants then re-evaluate their progress at sessions 5 and 9 in the program. These goals are not shared with other participants. Control participants do not set any SMART goals for the study.

Qualitative Measures

Semi-structured interviews are conducted with intervention participants and school staff to understand factors related to implementation and program outcomes including: appropriateness of the intervention for a school-based setting; acceptability of the intervention by participants; feedback on the logistics and makeup of the group; opinions about group topics, group leaders, and style of delivery; and influence of

the intervention on mental, behavioral health, educational, and social outcomes (see Table 2). Interviews are appropriately tailored for each type of interviewee, audiotaped, and last approximately 30 minutes.

Table 2. Qualitative Interview Questions

Categories	Example Questions
Going 4 Goals Impact	<ul style="list-style-type: none"> · <i>How did Going 4 Goals impact your day-to-day life?</i> · <i>How did it impact your relationships with parents/peers/teachers?</i>
Process	<ul style="list-style-type: none"> · <i>Tell me about any skills you may have used from the group.</i> · <i>What did you like most/least about [skills]?</i> · <i>What were the most/least helpful group activities you participated in?</i>
Design	<ul style="list-style-type: none"> · <i>Have you participated in any other groups related to stress management?</i> · <i>If so, how did it compare to Going 4 Goals?</i>
Logistics	<ul style="list-style-type: none"> · <i>How did you like the time of day that your group was held?</i> · <i>Did you like that it was held during school hours?</i> · <i>What did you think about the group makeup (mixed genders, etc.)?</i> · <i>What would you change about the group if you could?</i>

Confidentiality

To protect confidentiality, each participant is assigned a subject identification number that is only connected to their name on a file stored on a secured network and server maintained by the research staff behind a university firewall. The identification number is used on all data collection components (questionnaires, qualitative transcriptions, and goals sheets). All completed informed assent documents are stored in a locked file cabinet inside a locked office. All electronic data (quantitative data files, audio files, and qualitative transcriptions) are also stored on a secured network and server maintained by the research staff behind a university firewall. Contact sheets with participants' email, phone number, and address, which are used for follow-up interviews and surveys, are stored in a separate locked cabinet inside a locked room. Contact information collected electronically is stored behind a university firewall in a secure, password-protected, restricted-access server.

Intervention participants and their guardians are also assured that student discussions within the Going 4 Goals sessions, responses on surveys, and information given during interviews will not be shared with anyone outside of the research team, except for specific circumstances in which the research team needs to breach confidentiality (e.g., reports of suicidal or homicidal ideation, child abuse or neglect, etc.). Thus,

in most circumstances, parents, teachers, or school administrators will not have access to individual responses from the study. When study results are shared with school administrators, no participant names or ID numbers are included with the aggregate data.

Analysis Plan

Quantitative Data

We plan to conduct linear mixed models to examine whether there are significant changes in emotion regulation, distress tolerance, mindfulness skills, and interpersonal effectiveness skills at the post-intervention assessment compared to baseline assessment among the intervention group. Linear mixed models will also be used to examine significant changes in past 30-day substance use and likelihood of engagement in substance use and risky health behaviors at the post-intervention assessment compared to baseline assessment. We will compare changes in these outcome measures compared to youth in the control group. Additionally, as some students may not be present for all sessions, we will test to see if there is evidence of a relationship between the number of assessments attended and the outcomes.

Qualitative Data

After interviews are completed, qualitative audio files are compiled and sent to an external company for transcription. A coding team of four research assistants and the project manager review all transcribed interviews to create coding categories for each interview question. Student interviews are split into two sections (“impact and skill use” and “logistics”), and administrator/teacher interviews are coded whole. The team uses Atlas.ti to create qualitative tables and manually review each transcript to pull relevant quotations from each interview. All coding is also reviewed by another member of the team for reliability purposes. Lastly, qualitative summaries will be created by the coding team and placed into quantitative tables for dissemination.

Data Collection

The current study has been approved through Indiana University Purdue University Indianapolis’s Institutional Review Board (IRB #1610685795). A university supported initiative provided funding for this study, which began in July 2018 with an end date of December 2021. Participant recruitment started in August of 2018. To date, 13 groups have been implemented, with a total of 171 participants enrolled in the intervention. Additionally, out of the 171 participants that have been enrolled in the Going 4 Goals program, 146 have completed the program making the retention rate 85.4 percent.

The youth participating in the intervention have been primarily in the 9th grade (age range 12-16, mean age 14.3). The school staff targeted 9th graders to participate in Going 4 Goals given the limited number of mental health and SEL services provided for this age group, and difficulties school staff have witnessed with students transitioning to 9th grade (i.e., transitioning from middle school to high school in the midst of puberty). Of the 171 youth enrolled in Going 4 Goals, a majority have been male (72.5%

male) but diverse in regard to race/ethnicity (35.4% Black, 32% Hispanic/Latino, 24.6% White, 1.7% Native American/American Indian, 10.3% Multiracial). For the control group, it has been equally divided by gender (49.4% male), with the race/ethnicity mirroring the school demographics. Lastly, in regard to mental health diagnosis, 32% (n=55) of the intervention group has reported having a mental health diagnosis compared to 22.4% (n=122) of the control group. Qualitative interviews have also been conducted. To date, there have been 36 students, 7 teachers, and 4 school administrators who have completed qualitative interviews.

Discussion

This paper outlines the background, research design, and intervention components of “Going 4 Goals,” as a 9 session DBT-A skill group intervention for at-risk youth implemented within high schools. The proposed study is novel in that there is limited empirical evidence available in the literature on the efficacy of Tier 2 SEL interventions for at-risk high school youth, which is critical given that such youth are at greater risk for engagement in health risk behaviors. Thus, receiving appropriate evidence-based services that can reduce such risk is needed. The current study aims to fill this important research and clinical gap.

Implementing the Going 4 Goals intervention among high school youth has additional strengths. First, implementing the Going 4 Goals in schools increase access to mental health services for at-risk youth who may otherwise not have access to such resources. Implementing this program within schools also makes it easier to engage and maintain communication with participants, which can help keep youth engaged and active within the intervention. As mentioned above the participant retention rate has been high, at 85.4 percent. Second, we were able to partner with engaged school administrators who saw the benefit of the program and understood how participant could also enhance youth’s academic performance. Thus, the intervention group is being implemented during students’ homeroom class period. This is done so that there would be minimal disruption to the students’ schedules and to ensure that they are still attending their core classes and not missing any foundational curriculum. Holding groups during homeroom also protected teachers’ instruction time, minimizing the disruption in scheduling for both teachers and students. Third, given the minimal amount of materials needed to implement the program, this is a low-cost intervention. Thus, the intervention can more easily be implemented across different school systems and sustained within schools long-term. Lastly, our intervention does not require facilitators to hold special certifications or advanced degrees in order to deliver the content, meaning teachers, administrators, and other school staff are able to administer Going 4 Goals. For the current study, graduate students are serving as the group facilitators, with undergraduate students also helping as co-facilitators. These students do not have any special certifications nor are required to have any specific training, outside of being trained in the Going 4 Goals/DBT-A protocol, to lead the groups. A future direction of our work is to train school staff to deliver the intervention, which will establish feasibility of implementing the intervention by non-researchers or clinicians.

In addition to the strengths of this intervention, there are also some challenges and lessons learned for future research in this area. First, as we began implementing the intervention, we had some issues with students' punctuality and remembering to attend regularly. To mitigate this, we found that sending reminder text messages the morning of the group, delivering a school-wide announcement over the intercom, and having homeroom teachers remind students individually were effective ways of increasing our attendance rates. Email reminders were also sent to students, but were not well-received in the age group we serviced. Specifically, students indicated that they do not regularly check their email, and thus did not find the email reminders beneficial. Second, scheduling recurring weekly sessions was challenging due to school breaks, state testing, weather delays, field trips, and other unforeseen circumstances. This would, at times, alter our schedule; thus, an emphasis on constant communication with the schools is crucial. We found that obtaining a finalized semester calendar from the school ahead of time is helpful when working on the logistics for the group. Further, because our research team provides the intervention groups and are only able to attend at a specified time one day per week, any changes or cancellations due to school events meant that we had to completely cancel the session for the week. However, if school staff are trained as facilitators, there will be more flexibility in implementing the intervention and last-minute school schedule changes will not cause major disruptions to the timeline of the group. Training school staff facilitators will also aid in increasing access and reach of the intervention to more students, as well as address issues of sustainability of the intervention long-term within school systems. Third, we found that hosting the groups during the school day can be difficult in that a designated spot is required for the group to meet each week. This issue can also be addressed by training school staff, as they can utilize their own classrooms or office space for group sessions, as well as have more flexibility in the time of day to hold groups based on room availability. Also related to scheduling was class period during which the group was held. Generally, we run groups during a homeroom or study hall class period as to not interfere with core coursework; however, this may be problematic for schools that do not have a homeroom or study hall periods built into their schedules. So, alternative ways to fit the program into school hours may be challenging in other school settings.

Future Directions And Dissemination Plans

We anticipate that the Going 4 Goals will be effective in equipping at-risk students with skills to better cope with stress and reduce their engagement in risky behaviors, such as substance use. Through the completion of qualitative interviews with group participants and school administrators, we will also be able to gain important information on the facilitators, barriers, and attitudinal drivers to enhance Tier II SEL interventions with high-school settings. Such findings will help glean valuable information regarding how best to implement Tier II SEL and mental health programming aimed to reduce risk taking and increase emotional regulation among at-risk adolescents within high school settings. Future plans will be to develop procedures to sustain the intervention within the schools by training school staff in the intervention protocol and expand the implementation of the program to other school systems.

Declarations

Ethical approval and consent to participate: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The study protocol was approved by the Indiana University Purdue University Indianapolis's Institutional Review Board (IRB #1610685795). Passive consent for participation was sent to youth participants legal guardian. Written voluntary informed assent was obtained from all youth participants. Confidentiality was maintained, except if participants are at risk of significant harm or request assistance.

Consent for publication: not applicable

Availability of data and material: The data generated during the current study is available from the corresponding author on reasonable request.

Competing interests: The authors declare that they have no competing interests.

Funding: The current study was supported by internal funding by Indiana University. Work by TZ was supported by NIH award K01DA043654 (PI: Zapolski). NIH had no role in the study design, collection, analysis or interpretation of the data, writing the manuscript, or the decision to submit the paper for publication.

Authors' contributions: The contribution of each author is as follows: TZ conceived of the study, participated in its design, coordinated writing components, and contributed to the drafting and editing of the manuscript. MW was the project manager of the study and contributed to the drafting and editing of the manuscript; SK, QC, RR, SF, and ES participated in the data collection and contributed to drafting of the manuscript and editing; MA, MC, MS, and WW participated in the study design.

Acknowledgements: not applicable

References

1. Bangi, A., Dolcini, M. M., Harper, G. W., Boyer, C. B., & Pollack, L. M. (2013). Psychosocial outcomes of sexual risk reduction in a brief intervention for urban African American female adolescents. *Journal of HIV/AIDS & Social Services*, 12(2), 146–159. <https://doi-org.proxy.ulib.uits.iu.edu/10.1080/15381501.2013.768949>
2. Blewitt, C., O'Connor, A., Morris, H., May, T., Mousa, A., Bergmeier, H., Nolan, A., Jackson, K., Barrett, H., & Skouteris, H. (2019). A systematic review of targeted social and emotional learning interventions in early childhood education and care settings. *Early Child Development and Care*. <https://doi-org.proxy.ulib.uits.iu.edu/10.1080/03004430.2019.1702037>

3. Boyer, T. W. (2006). The development of risk-taking: A multi-perspective review. *Developmental review*, 26(3), 291-345.
4. Burckhardt, R., Manicavasagar, V., Shaw, F., Fogarty, A., Batterham, P. J., Dobinson, K., & Karpin, I. (2018). Preventing mental health symptoms in adolescents using dialectical behaviour therapy skills group: a feasibility study. *International Journal of Adolescence and Youth*, 23(1), 70-85. DOI: 10.1080/02673843.2017.1292927.
5. Cardaciotto, L., Herbert, J. D., Forman, E. M., Moitra, E., & Farrow, V. (2008). The assessment of present-moment awareness and acceptance: The Philadelphia Mindfulness Scale. *Assessment*, 15(2), 204–223. <https://doi-org.proxy.ulib.uits.iu.edu/10.1177/1073191107311467>
6. Cook, N. E., & Gorraiz, M. (2016). Dialectical behavior therapy for nonsuicidal self-injury and depression among adolescents: Preliminary meta-analytic evidence. *Child and Adolescent Mental Health*, 21(2), 81–89. <https://doi-org.proxy.ulib.uits.iu.edu/10.1111/camh.12112>
7. Cunningham, R. M., Walton, M. A., & Carter, P. M. (2018). The major causes of death in children and adolescents in the United States. *New England Journal of Medicine*, 379(25), 2468-2475.
8. Das, J. K., Salam, R. A., Arshad, A., Finkelstein, Y., & Bhutta, Z. A. (2016). Interventions for adolescent substance abuse: An overview of systematic reviews. *Journal of Adolescent Health*, 59(4, Suppl), S61–S75. <https://doi-org.proxy.ulib.uits.iu.edu/10.1016/j.jadohealth.2016.06.021>
9. Doran, G. T. (1981). There's a SMART way to write management's goals and objectives. *Management Review*, 70(11), 35-36.
10. Dowling, K., Simpkin, A. J., & Barry, M. M. (2019). A cluster randomized-controlled trial of the MindOut social and emotional learning program for disadvantaged post-primary school students. *Journal of Youth and Adolescence*, 48(7), 1245–1263. <https://doi-org.proxy.ulib.uits.iu.edu/10.1007/s10964-019-00987-3>
11. Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. *Child Development*, 82(1), 405–432. <https://doi-org.proxy.ulib.uits.iu.edu/10.1111/j.1467-8624.2010.01564.x>
12. Fischer, S., & Smith, G. T. (2004). Deliberation affects risk taking beyond sensation seeking. *Personality and Individual Differences*, 36(3), 527–537. [https://doi.org/10.1016/S0191-8869\(03\)00112-0](https://doi.org/10.1016/S0191-8869(03)00112-0)
13. Flay, B. R. (2002). Positive youth development requires comprehensive health promotion programs. *American journal of health behavior*, 26(6), 407-424.
14. Flynn, D., Joyce, M., Weihrauch, M., & Corcoran, P. (2018). Innovations in practice: Dialectical behavior therapy – skills training for emotional problem solving for adolescents (DBT STEPS-A): Evaluation of a pilot implementation in Irish post-primary schools. *Child and Adolescent Mental Health*, 23(4), 376-380
15. *Adolescent Mental Health*, 23(4), 376-380

16. Flynn, D., Joyce, M., Weihrauch, M., Corcoran, P., Gallagher, E., O'Sullivan, C., & Hurley, P. (2017). Dialectical behaviour therapy–skills training for emotional problem solving for adolescents (DBT STEPS-A): Pilot implementation in an Irish context. Retrieved from <https://www.hse.ie/eng/services/list/4/mental-health-services/connecting-for-life/publications/dbt-steps-a-report-on-the-pilot-implementation-in-ireland.pdf>. [last accessed on April 29, 2021]
17. Greenberg, M. T., Weissberg, R. P., O'Brien, M. U., Zins, J. E., Fredericks, L., Resnik, H., & Elias, M. J. (2003). Enhancing school-based prevention and youth development through coordinated social, emotional, and academic learning. *American Psychologist*, 58(6–7), 466–474. <https://doi-org.proxy.ulib.uits.iu.edu/10.1037/0003-066X.58.6-7.466>
18. Houck, C. D., Barker, D. H., Hadley, W., Menefee, M., & Brown, L. K. (2018). Sexual risk outcomes of an emotion regulation intervention for at-risk early adolescents. *Pediatrics*, 141(6), 1–9.
19. Jackson, C., Geddes, R., Haw, S., & Frank, J. (2012). Interventions to prevent substance use and risky sexual behaviour in young people: A systematic review. *Addiction*, 107(4), 733–747. <https://doi-org.proxy.ulib.uits.iu.edu/10.1111/j.1360-0443.2011.03751.x>
20. Katz EC, Fromme K, D'Amico EJ. Effects of outcome expectancies and personality on young adults' illicit drug use, heavy drinking, and risky sexual behavior. *Cognitive Therapy and Research*. 2000;24(1):1–22.
21. Lawson, G. M., McKenzie, M. E., Becker, K. D., Selby, L., & Hoover, S. A. (2019). The Core Components of Evidence-Based Social Emotional Learning Programs. *Prevention science : the official journal of the Society for Prevention Research*, 20(4), 457–467. <https://doi.org/10.1007/s11121-018-0953-y>
22. Maslowsky, J., Owotomo, O., Huntley, E. D., & Keating, D. (2019). Adolescent risk behavior: Differentiating reasoned and reactive risk-taking. *Journal of Youth and Adolescence*, 48(2), 243–255. <https://doi-org.proxy.ulib.uits.iu.edu/10.1007/s10964-018-0978-3>
23. Mazza, J. J., Dexter-Mazza, E. T., Miller, A. L., Rathus, J. H., & Murphy, H. E. (2016). DBT? Skills in schools: Skills training for emotional problem solving for adolescents DBT Steps-A. Guilford Publications.
24. Mazza, J. J., & Dexter-Mazza, E. T. (2019). DBT skills in schools: Implementation of the DBT steps—A social emotional curriculum. In M. A. Swales (Ed.), *The Oxford handbook of dialectical behaviour therapy*. (pp. 719–733). Oxford University Press.
25. MacPherson, H. A., Cheavens, J. S., & Fristad, M. A. (2013). Dialectical behavior therapy for adolescents: Theory, treatment adaptations, and empirical outcomes. *Clinical Child and Family Psychology Review*, 16(1), 59-80.
26. McCredie, M. N., Quinn, C. A., & Covington, M. (2017). Dialectical behavior therapy in adolescent residential treatment: outcomes and effectiveness. *Residential Treatment for Children & Youth*, 34(2), 84-106.
27. Pechorro, P., Russell, J. D., Ayala-Nunes, L., Gonçalves, R. A., & Nunes, C. (2018). The brief peer conflict scale: Psychometric properties among a sample of incarcerated male juvenile offenders. *International Journal of Offender Therapy and Comparative Criminology*, 62(8), 2414–2429.

28. Perepletchikova, F., Axelrod, S. R., Kaufman, J., Rounsaville, B. J., Douglas-Palumberi, H., & Miller, A. L. (2011). Adapting dialectical behaviour therapy for children: Towards a new research agenda for paediatric suicidal and non-suicidal self-injurious behaviours. *Child and adolescent mental health, 16*(2), 116-121.
29. Powers, A., Stevens, J., Fani, N., & Bradley, B. (2015). Construct validity of a short, self-report instrument assessing emotional dysregulation. *Psychiatry Research, 225*(1–2), 85–92. <https://doi-org.proxy.ulib.uits.iu.edu/10.1016/j.psychres.2014.10.020>
30. Rabinovitz, S., & Nagar, M. (2018). The effects of craving on implicit cognitive mechanisms involved in risk behavior: Can dialectical behavior therapy in therapeutic communities make a difference? A pilot study. *Therapeutic Communities, 39*(2), 83–92. <https://doi-org.proxy.ulib.uits.iu.edu/10.1108/TC-12-2017-0034>
31. Rathus, J. H., & Miller, A. L. (2015). *DBT@skills manual for adolescents*. Guilford Press.
32. Russell, J. D. (2014). The structure of child and adolescent aggression: Validation of a Brief Peer Conflict Scale. New Orleans: University of New Orleans. Retrieved from <http://scholarworks.uno.edu/td/1892>
33. Simons, J. S., & Gaher, R. M. (2005). The Distress Tolerance Scale: Development and validation of a self-report measure. *Motivation and Emotion, 29*(2), 83–102. <https://doi-org.proxy.ulib.uits.iu.edu/10.1007/s11031-005-7955-3>
34. Steinberg, L. (2007). Risk Taking in Adolescence: New Perspectives From Brain and Behavioral Science. *Current Directions in Psychological Science, 16*(2), 55–59. <https://doi.org/10.1111/j.1467-8721.2007.00475.x>
35. Snyder, F., Flay, B., Vuchinich, S., Acock, A., Washburn, I., Beets, M., & Li, K. K. (2010). Impact of a social-emotional and character development program on school-level indicators of academic achievement, absenteeism, and disciplinary outcomes: A matched-pair, cluster randomized, controlled trial. *Journal of research on educational effectiveness, 3*(1), 26–55. <https://doi.org/10.1080/19345740903353436>
36. Thurstone, C., Hull, M., Timmerman, J., & Emrick, C. (2017). Development of a motivational interviewing/acceptance and commitment therapy model for adolescent substance use treatment. *Journal of Contextual Behavioral Science, 6*(4), 375–379. <https://doi-org.proxy.ulib.uits.iu.edu/10.1016/j.jcbs.2017.08.005>
37. Weiss, N. H., Tull, M. T., Davis, L. T., Searcy, J., Williams, I., & Gratz, K. L. (2015). A Preliminary Experimental Investigation of Emotion Dysregulation and Impulsivity in Risky Behaviours. *Behaviour change : journal of the Australian Behaviour Modification Association, 32*(2), 127–142. <https://doi.org/10.1017/bec.2015.5>
38. Williamson, A. A., Modecki, K. L., & Guerra, N. G. (2015). SEL programs in high school. In J. A. Durlak, C. E. Domitrovich, R. P. Weissberg, & T. P. Gullotta (Eds.), *Handbook of social and emotional learning: Research and practice*. (pp. 181–196). The Guilford Press.

39. Yeo, A. J., Germán, M., Wheeler, L. A., Camacho, K., Hirsch, E., & Miller, A. (2020). Self-harm and self-regulation in urban ethnic minority youth: a pilot application of dialectical behavior therapy for adolescents. *Child and adolescent mental health*, 25(3), 127-134.
40. Zapolski, T.C.B., Cyders, M. A., & Smith, G. T. (2009). Positive urgency predicts illegal drug use and risky sexual behavior. *Psychology of addictive behaviors : journal of the Society of Psychologists in Addictive Behaviors*, 23(2), 348–354. <https://doi.org/10.1037/a0014684>
41. Zapolski, T. C. B., Stairs, A. M., Settles, R. F., Combs, J. L., & Smith, G. T. (2010). The measurement of dispositions to rash action in children. *Assessment*, 46, 220–231.
42. Zapolski, T. C.B., & Smith, G. T. (2017). Pilot study: Implementing a brief DBT skills program in schools to reduce health risk behaviors among early adolescents. *The Journal of School Nursing*, 33(3), 198-204.

Figures

Figure 1

Study Flow