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Addressing High School Student Stress: Exploring Student and Teacher Perceptions of a Modified DBT STEPS-A Curriculum

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**ADDRESSING HIGH SCHOOL STUDENT STRESS:
EXPLORING STUDENT AND TEACHER PERCEPTIONS OF A MODIFIED
DBT STEPS-A CURRICULUM**

GREG CONSTANTINE HATZIS

A DISSERTATION

In the

Isabelle Farrington College of Education and Human Development

Presented to the Faculty of Sacred Heart University

in Partial Fulfillment of the Requirements for the

Degree of Doctor of Education

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Greg Constantine Hatzis

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ABSTRACT

ADDRESSING HIGH SCHOOL STUDENT STRESS:
EXPLORING STUDENT AND TEACHER PERCEPTIONS OF A MODIFIED
DBT STEPS-A CURRICULUM

Greg Constantine Hatzis

Dr. Suzanne Marmo, Dissertation Chair

The problem of practice investigated is high school student stress and the many detrimental effects. The setting is a public high school in Southwestern Connecticut in a community that places a high value on academic achievement and college acceptance. A root cause analysis identifies two actionable drivers of change in teacher practices and the lack of student self-management skills. A review of scholarly knowledge and local practices leads to an investigation of strategies to mitigate the problem. This review identifies Dialectical Behavior Therapy Skills Training for Emotional Problem Solving for Adolescents (DBT STEPS-A) as a high leverage strategy to address the problem. Using a practical action research approach with a mixed-methods convergent design, the primary researcher creates an intervention using a modified version of DBT STEPS-A implemented in nine sections of grade 10 health classes over 6 weeks. Quantitative data comes from student surveys taken pre and post-intervention and qualitative data comes from student open-ended question responses and teacher focus group interviews. Surveys measure practical and recent usage of the DBT STEPS-A strategies as well as student perception of usefulness. Results of paired samples *t*-tests pre- and post-intervention indicate a statistically significant increase of practical use of the major skill areas of DBT

STEPS-A. Post-intervention survey results indicate high percentages of students finding the skills useful. Qualitative results reveal themes of why students used the skills, like distraction, a purposeful mindset change, and cultivating positivity, as well as themes of why students found the skills useful, like self-discipline, positive mindset, and personal and social growth. Teachers find the skills useful and identify key ways to alter future lessons to ensure greater student engagement in order to increase class discussion during lessons. Results indicate that a partial implementation of a DBT STEPS-A curriculum may be an effective way of teaching stress reducing strategies to high school students.

DEDICATION

This project is dedicated to my wife, Susan, and my children, Sophia and Luke. Their support was unrelenting and their understanding of the many hours spent on classwork, research, and writing will require a lifetime of payback and gratitude. Experiencing my children navigate the landscape of academics during the pandemic era of 2020-2022 was a major inspiration for this work, and their resilience and love taught me so much.

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Definition of Terms

Academic Stress - the negative physiological and emotional responses that students have in regard to anticipated challenges from their coursework, fear of failure or a disappointing performance on school-related tasks, or the worry about disappointing parents, teachers, peers, or oneself due to poor performance.

Dialectical Behavior Therapy - an evidence based therapy that combines principles of behavior therapy, cognitive behavior therapy, and mindfulness. It establishes a “dialectic” between helping individuals accept the reality of their lives and their own behaviors and helping them learn to change their lives, including any dysfunctional behaviors. Its underlying emphasis is on helping individuals learn both to regulate and to tolerate their emotions. DBT was initially designed for especially difficult-to-treat patients, such as those with borderline personality disorder.

Elements of DBT STEPS-A

Being dialectical – The act of understanding there is more than one way to see a situation and that two seemingly opposing views can both be true at the same time. It leads to expanding one’s worldview, avoiding assumptions, and being more flexible in situations

Distress Tolerance – The ability to manage or control a stressful emotional situation without engaging in behavior that will make the situation worse. DBT provides several strategies that help one to avoid crisis by distracting the mind through physical breaks, visualization, or sensory input.

Emotion Regulation- The ability to reduce unpleasant emotions and reduce one's vulnerability to strong reaction from negative emotions, often by understanding the effect of emotions and purposely increasing positive experiences.

Interpersonal effectiveness – The ability to develop and maintain relationships and increase the chances that interactions with others will result in a positive outcome. It emphasizes the importance of appropriate assertiveness, minimizing conflict, and still maintaining a high level of self-respect.

Mindfulness – The practice of being actively aware of one's present surroundings and fully focusing on the present moment in a non-judgmental way. It is noticing one's thoughts and feelings without dwelling on the emotions that tied to them.

Radical Acceptance – The concept that suffering comes from one's attachment to pain, so therefore the key to end suffering is to accept the reality of a situation instead of dwelling on the emotional response. Radical acceptance is not agreeing or forgiving but noticing one's thoughts objectively in order to better understand what one can and cannot control.

Chapter I: The Problem of Practice

High school students experience high levels of academic stress which is detrimental to their wellbeing and counterproductive to achievement. (Pascoe, et al., 2020). In high-achieving districts where students feel an expectation to attend highly competitive colleges and to achieve exceptional grades, the stress that results from academic pressures contributes to a number of psychological and physiological issues (Feld & Shusterman, 2015). Students identify schoolwork, grades, and college admissions as the main sources of stress in their lives, even when compared to family, friend, and relationship issues (Leonard, et al., 2015). Class grades and overall grade point average (GPA) often become the way students demonstrate achievement to their parents, colleges, school officials, peers, and themselves, resulting in increased motivation to achieve the highest grades and GPA possible. Feeling pressure to maintain high achieving grades combined with the usual pressures adolescents encounter as their bodies and brains develop toward adulthood, high school students often face major challenges in maintaining their mental health. In order to assist students to be at their best academically, socially, and mentally, it is imperative that high schools find effective strategies to help students mitigate stress.

Background

The Problem of Stress

In considering the purpose of education, scholar John Dewey stated in 1930, “the ultimate aim of education is nothing other than the creation of human beings in the fullness of their capacities” (Dewey 1930/1984, p. 289). What Dewey may not have predicted is that on the road to helping students fulfill their capacity, education may become a major source of stress for many students, which can be one of the main roadblocks to achievement (Feld &

Shusterman, 2015). A survey of over 250,000 middle and high school students by the Stanford University-based organization called Challenge Success reveals that 63% are “constantly worried about academics,” 62% say “workload is a major source of stress” and 77% experience “stress-related symptoms” (Challenge Success, 2021). A report by the Robert Wood Foundation identified “excessive pressure to excel,” as a major source of stress and having deleterious impact on adolescents – to the same magnitude as other traditional environmental factors such as poverty, trauma, and discrimination (Geisz & Nakashian, 2018). The National Academies of Sciences, Engineering and Medicine published a report advocating for equity in public health and pointed out that stress in schools deserves more attention as a major issue. The report identifies students from high performing schools in affluent and well-educated communities as being “at-risk” for facing chronic stress, placing them in the same public health category as children experiencing poverty, a lack of shelter or no health care (DeVoe, et al., 2019).

High levels of stress can negatively affect a student’s mental health and levels of happiness, which can then lead to problems that are more serious if it persists. (Bernal-Morales, et al., 2015; Pascoe, et al, 2020; Suldo, et al., 2018). The Organization for Economic Cooperation and Development (OECD) surveys 540,000 students annually in 72 countries as part of their international standardized testing performance report (PISA). They find that students feeling high levels of anxiety due to school are “less content” than their peers, which they define as lower rates of life satisfaction (OECD, 2016). Students who experience repeated stimulation of their stress-response system tend to report a reduced level of life satisfaction and drop out of school earlier (Garrett-Peters, et al., 2019). General discontentment may be a sign of a mental health disorder, and stress can be a clear risk factor toward making matters worse (Suldo, et al., 2008). As Mental Health America (2021) reported that in 2017-18, 19% of adults faced issues

with mental health and further highlighted that while depression rates among youth were growing, nearly 60% of youth ages 11-17 did not receive the proper treatment. Studies are now finding links between students who are experiencing stress due to poor academic performance and high rates of depression (Gao, et al., 2020; Awadalla, et al., 2020). This is particularly concerning since once people develop a major depressive disorder and continue to suffer from depressive episodes, they become more susceptible to additional episodes which can accelerate symptoms over time and lead to a deterioration of functionality (Moylan, et al., 2013). Of particular note is that high-achieving students are at higher risk for experiencing higher levels of stress, which contributes to more significant mental health issues (Suldo, et al., 2008).

Lack of sleep can be a physiological effect of increased stress, which in turn can lead to additional health problems (Noland, et al., 2009; Feld & Shusterman, 2015). Adolescents facing academic pressures who do not engage in healthy sleep habits are susceptible to the dangers associated with insufficient sleep, as well. Inadequate sleep (less than 9 hours) has been shown to affect adolescents by contributing to lower grades, difficulty getting along with others, obesity, or additional harmful behaviors like smoking and drinking (Noland, et al., 2009; Evans-Whipp & Gasser, 2018). Longitudinal studies show that students who are habitually sleep deprived perform progressively worse in school compared to their well-rested peers, and other research correlates lack of sleep with anxiety, maladaptive behavior, and psychiatric conditions (Kronholm, et al., 2014).

Another concerning side effect of elevated stress levels is the willingness to turn to harmful substances like alcohol or drugs as a coping mechanism. Prolonged anxiety, especially among affluent, suburban students, can lead to an increase in substance abuse (Coley, et al.,

2018). One study comparing high achievers in high socio-economic status (SES) areas with high-achievers in low-SES areas found that the wealthier students were more likely to turn to harmful substances than inner-city students due to better access to substances and the increased pressure to perform well (Lyman & Luthar, 2014). In another longitudinal study over three years in a southern district in Connecticut, affluent, suburban students who reported frequent use of drugs and alcohol consistently showed difficulty adjusting to their social environments (McMahon & Luthar, 2006). Once students start using harmful substances resulting from anxiety, there can be a cyclical effect where usage contributes to greater levels of anxiety (Leonard, et al, 2015). While teens may use drugs and alcohol for a variety of reasons, stress can be a trigger for students to engage in self-medication for symptom relief, which can then expose them to the dangers of substance misuse and abuse.

Local Context

The researcher will conduct the study at Fairfield Ludlowe High School (FLHS), which is a part of the Fairfield Public Schools (FPS). According to the ACT report on the criteria of high performing high schools (ACT, 2012), FLHS meets several of the criteria, including a safe and orderly environment, strong student-teacher relationships, high expectations for learning, access to teaching resources and technology, and formative and summative assessments aligned to the curriculum. As seen in Table 1, school outcomes include a high graduation rate, above average SAT scores, large numbers of students participating in advanced placement (AP) courses, and a high percentage of students attending college (Fairfield Ludlowe High School, 2022).

Table 1

Performance Data of Fairfield Ludlowe HS Compared to State of Connecticut, 2019-20

Performance Metric	Fairfield Ludlowe HS (<i>n</i> =1,500)	State of CT (<i>n</i> =42,939)
% Graduation rate: cohort 4-year	99.4	88.5
% of graduates enrolling in college in the first year	88.0	71.5
Number of AP exams administered	750	n/a
Average SAT Score – combined (Fall 2021 COVID delayed)	1177	1039 ²
% taking College Career Readiness Courses ¹	98.9	70.4

¹ College-and-Career-Readiness courses include Advanced Placement (AP), Career and Technical Education (CTE) courses, workplace experience and dual enrollment courses.

²Connecticut Report. (2020), *SAT Suite of Assessments Annual Report*. College Board.

FLHS is one of two public high schools in Fairfield, and the two schools offer identical programs of study and have identical administrative structures. FLHS is slightly less diverse and performs slightly higher on performance indicators like the SAT (Connecticut State Department of Education (CSDE), 2021a). Overall, the district of Fairfield is classified as “District Reference Group (DRG) B” by the State of Connecticut, which is second highest in affluence and second lowest in need (Cannay, 2006). Table 2 highlights some the demographic data of FLHS.

Table 2

Demographic Data of Fairfield Ludlowe HS Compared to State of Connecticut, 2019-20

Demographic Category	FLHS <i>N</i>	FLHS Percentage of total population	State of CT Percentage
Enrollment	1500		
Underrepresented Groups (“non-white”)	285	19.1	48.9
Eligible for free and reduced lunch	201	13.4	43.3
English learners	11	0.7	8.3
Students with disabilities	191	12.7	16
Chronically absent	99	6.6	12.2
Suspension and Expulsion	29	1.9	4.9

Note: Data derived from the state data collection system (Connecticut State Department of Education, 2021a).

When comparing the FLHS population to other schools in the state of Connecticut, there are fewer people in traditionally underrepresented groups and fewer who are economically marginalized, so one could possibly argue that the challenges facing most students at FLHS are fewer than other school populations facing greater financial need, systemic inequities, or more challenging societal obstacles. However, educators in every school must still care for their children and for their well-being. Increasingly, the effects of academic stress are a major factor in adolescent well-being and a major source of trauma, which disrupts the development of student abilities to function cognitively, socially, emotionally, and behaviorally. (DeVoe, et al., 2019; Geisz & Nakashian, 2018; Keels, et al., 2021). Schools need to address the problems their students face, and therefore endeavor to create a structure of support for all children.

As is common in educational priorities of most secondary schools, the district prioritizes social-emotional health within their district improvement plan (FPS, 2019). However, no

formalized program or approach has yet to be included within the plan to implement specific interventions. The district improvement plan specifically lists, “align and expand social and emotional learning training and supports” as one of the goals (FPS, 2019). This indicates an important acknowledgement of the need, and placing it in the district plan may allow for a future financial and human resource commitment. For the past several years, FLHS focuses one of the school improvement goals around social-emotional support for students. Past goals have included: “Foster an inclusive environment that develops and supports interpersonal relationships, personal safety, and responsibility” (FLHS, 2019). These efforts demonstrate that the district and school are aware of the importance of the social and emotional well-being of students.

Statement and Definition

The problem of practice addressed in this study is the high level of academic stress experienced by high school students who live in high performing districts, live in communities that place a high value on higher education, and have not received targeted instruction in stress-reducing strategies. For purposes of this study, the term “stress” and/or “academic stress” will be used to refer to the negative physiological and mental responses that students have in regard to anticipated challenges from their coursework, fear of failure or a disappointing performance on school-related tasks, or the worry about disappointing parents, peers, or oneself due to poor performance. Besides the results of poor grades, students may also feel stress from feeling underprepared, excessive workload, poor instruction, disorganization, inability to balance schoolwork and outside activities, or time management (Thakkar, 2018; Pope, et al., 2015).

Prior to this study, the school had undertaken some initial efforts to address the problem of practice. Data from a variety of sources indicate there is a gap between the school's goal of supporting students in mitigating stress levels and what students report regarding their wellbeing. A school climate survey from 2019 reflected that 90% of students felt that there were high expectations for learning at the school (Fairfield Public Schools, 2019b). High expectations for academic performance has contributed to increased stress in previous research (Feld & Shusterman, 2015; Gao, et al., 2020). This suggests that high-performing students of FLHS may be at risk for chronic stress and related problems associated with chronic stress. The same climate survey indicated that just slightly more than 1 in 4 students indicated that they have been taught stress-reducing strategies, as shown in Table 3. This prompted the school to attempt basic interventions to teach students strategies during the 2020-21 school year through school-wide advisory lessons. However, efforts were somewhat limited due to challenges caused by the hybrid learning environment during the COVID-19 pandemic in 2020-21. When the school administered the survey again in 2021, results indicated an improvement, with slightly less than half of all students indicating that they learned strategies to manage stress. As shown in Table 3, while a 20-point gain is a notable increase, the overall percentage was still low (48.2%), so future efforts to integrate stress reduction instruction may help improve this outcome.

Table 3

School Climate Survey Responses to the Question: “While at school I have been taught ways to manage stress (like mindfulness, yoga, or other stress reducer activities).”

Response	2019*		2021**	
	<i>n</i>	%	<i>n</i>	%
Yes	352	28.0	406	48.2
No	631	50.3	237	28.2
Not sure	272	21.7	198	23.6

* Total *N*=1255; **Total *N*=841

Additional efforts by the school to help reduce student stress came in the form of professional development (PD) aimed at increasing teacher knowledge about social and emotional learning and around stress-management. Some teaching practices can be a known source of stress for students (Gallaway, et. al., 2013; Kunnath, 2017). However, it is also true that when teachers are knowledgeable about stress reducing strategies and can implement them in the classroom, students stand to benefit at high levels (Wigelsworth & Quinn, 2020). At FLHS, a PD session in November of 2020 outlined how teachers’ professional goal planning could tie to the SEL skill of self-management and stress reduction. A February, 2021 PD session focused on managing student stress, and teachers received numerous resources to explore seven different strategies to reduce stress, like increasing fairness, establishing routines, or creating a positive environment. The principal chose these topics after conducting initial research and consulting with the school improvement team about relevant topics for teachers. As shown in Table 4, surveys results taken after the PD session indicated that teachers believed the interventions could be effective and they would be willing to attempt them in their classrooms.

Table 4

Results of the Teacher Survey Following the Professional Development Session on Stress-Reducing Strategies, by Strategy

Strategy	Percent who believe strategy can reduce stress ^a	Percent who are willing to try it in their classrooms ^b
Fairness	100	100
Access	100	89
Routines	100	100
Positive Environment	90	86
Goal Setting	81	88
Emotions Planner	91	82
Mental Health Supports	89	89

Note. N=141

^a Teacher responded Yes to “Do you feel this strategy could help someone reduce stress?”

^b Responded with a 3 or 4 on Likert-type scale to the question, “How willing would you be to try this technique in the future?” 1= Not Willing; 4= Very Willing

Results reported in in Tables 3 and 4 show that the school had made initial progress toward growing teacher capacity to teach stress-reducing strategies. The teachers believed the strategies would work, there was a willingness to try them, and more students were indicating they have been taught strategies. However, teachers did not implement these changes universally in all classrooms and the administration did not monitor or assess the effectiveness of the strategies. By studying this problem in depth, this Dissertation in Practice Improvement Science Study has the potential to establish a consistent and sustainable approach that will affect all students in the school. According to Perry, et al. (2020), the beneficial practices from successful dissertation projects become part of the regular routines to support students rather than being “lost in institutional memory” (p. 56).

Further evidence of the importance of addressing student stress comes from comments of the students themselves. During a series of end-user consultations ($N=45$) with classes about the how they are impacted by the pursuit of high grades, Table 5 highlights the themes which emerge, including shame, pursuit of approval of others, a sense of self-worth, and the physiological effect.

Table 5

Themes from student comments about the impact of the pursuit of high grades

Theme	<i>n</i>	Sample Quotes
Shame	9	<ul style="list-style-type: none"> – I blame myself when I get a bad grade. – I feel shame and sadness when I get a bad grade.
Approval (others)	16	<ul style="list-style-type: none"> – With grades comes praise. – I want my teachers to like me.
Approval (self)	13	<ul style="list-style-type: none"> – It feels good when I get a good grade. – Grades are what drive you.
Physiological	7	<ul style="list-style-type: none"> – I don't go to sleep until I finish my homework – I've lost sleep if I'm worried about an essay

Note. $N = 45$

The range of themes underscores the many ways that the drive for high achievement can affect students. However, it is important to look deeper into the effect of the stress that arises from this because this data does not reveal the full level of impact. For instance, self-approval can be a positive trait toward a healthy mindset, but if students pin all their self-worth on just grades, then a single bad grade can be devastating (Metsapelto, et al., 2020). Teachers and parents will praise students for completing homework, but if it means only sleeping 3-4 hours a night, it can have a negative effect on the student's health (Evans-Whipp, & Gasser, 2018). Helping students

find ways to manage stressful situations can help prevent them from escalating to unhealthy conditions.

The effort to help students deal with stress is also a matter of equity. Academic stress can be a trigger for other mental disorders like depression and social anxiety (Pascoe, et al., 2020), and these issues are often associated with stigma among adolescents (Lynch, et al., 2021). Students experiencing symptoms may become victims of teasing or ostracism and then avoid seeking help (KVC Kansas, 2020). Funding for research related to adolescent wellness is not adequate to meet the growing needs in this area (Geisz & Nakashian, 2018). Children in poverty are more likely to experience disorders related to depression and anxiety (Ridley, et al., 2020). In addition, students of color as well as students in poverty have traditionally not accessed supports for mental health as readily as affluent white students (Lipson, et al., 2018; Andrade, et al., 2014). Even in a district that generally has the means to offer supports such as school psychologists and social workers, it is still challenging to address the needs of all students, and traditionally marginalized students may face challenges accessing outside resources. Efforts such as this study that explore ways for teachers to deliver practices universally in a school setting can serve a need to support all students and improve mental health and overall well-being.

Setting and System

Reviewing the context in which students operate within Fairfield Ludlowe High School can provide insight as to why the problem of stress is pervasive. The school and district do provide some structures that help students deal with academic pressures. The school places incoming students in one of three houses, each of which is served by a house principal, dean of

students, three school counselors, and homeroom teachers. Since a specific group of support personnel follows students for all of their years in high school, they can develop relationships and monitor the students more closely. However, since the house principals are responsible for evaluating the school staff as well as for chairing all of special education planning and placement meetings, these duties can take considerable time and detract from their ability to grow relationships with the majority of their students. School counselors supervise between 170 and 200 students, which equates to two homerooms per grade level. Community expectations require counselors to spend time personalizing letters of recommendation for students who will be attending college and helping upperclassmen and their families navigate the college application process. Counselors are also able to meet with almost every student one on one to discuss course selections for each school year. Counselors are available for ad hoc sessions to help students to problem solve immediate issues, primarily focusing on academic or relationship problems, and refer students to the social workers and school psychologists for more serious mental health support.

The school provides a rich array of extra-curricular activities to help students find a healthy outlet from the pressures of school. A majority of students (63%) indicate that they participate in any one of the 60 clubs and activities offered before and after school and 56% of students participate in at least one of the 32 different athletic teams (Fairfield Public Schools, 2021a). About twice a month, students participate in clubs and organizations during a dedicated 25-minute activity period that is part of the school day. While participation in extra-curricular activities is high, school counselors anecdotally share that students often worry that they do not have enough activities listed in their applications, which can lead to oversubscribing themselves in multiple time-consuming activities (O'Brennan, et al., 2020). Students perceive that it is

important to appear well rounded and involved to impress college admissions personnel. At the same time, focusing on schoolwork can often deter students from pursuing outside activities. On the school climate survey, students who do not participate in clubs, activities or athletics were asked why, and the number one reason (41.5%) was “I have too much homework” which had twice as many respondents as the second highest answer (21.5%), “I work after school” (Fairfield Public Schools, 2021a). The culture of the school is that academic pressure to complete homework acts as a potential deterrent for students to participate in extra-curricular activities, while even those who do participate often feel they are not doing enough to improve their chances of college acceptance.

Another aspect of the system is the high value and attention the community places on academic performance. Recent discussions around grading practices illustrate the culture of academic pressure. In 2018-19, Fairfield Public Schools instituted a grading policy in which only summative tasks counted in the determination of a student’s final class marks. Formative tasks and homework counted for 0% of a student’s final grade as these tasks are meant for feedback and practice, not for students to demonstrate mastery. This resulted in many students not completing their homework since they did not view homework completion as a benefit nor a detriment toward their grade. Teachers argued that successful completion of formative assignments prepared students to perform better on summative assessments, but that didn’t sway the student to higher completion rates. Frustration grew among some parents because they saw their children doing poorly on tests because the students were not adequately prepared. In addition, parents were upset that their children no longer received the advantage of getting a positive bump in their class grade for homework completion. Subsequently, the board of education revised its homework policy stating explicitly that the schools cannot determine final

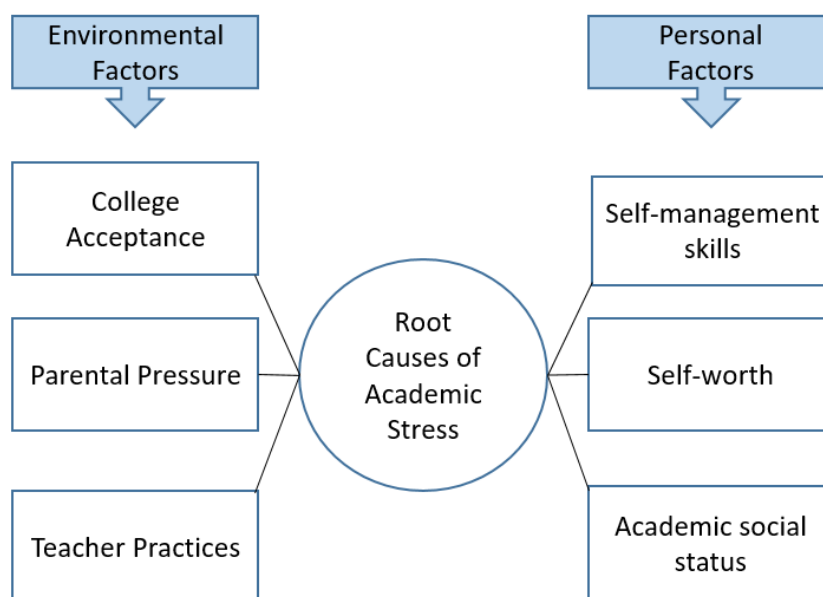
grades based on 100% summative assessments, (Fairfield Board of Education, 2019). As a result, the schools weighed summative scores as 90% of the course grade and formative/homework grades as 10%. The message behind this policy was that any efforts in grading reform needed to avoid the potential of having a negative impact on GPA.

Root Cause Analysis

To adequately determine potential interventions, one must first explore the possible source of the problem through a root cause analysis. In the improvement science process, these ideas come from brainstorming all factors related to the topic, and then organizing the ideas into themes. This process is depicted graphically in a “fishbone diagram” (See Appendix A). After brainstorming potential causes of high academic stress, the researcher identified environmental factors out of a student’s locus of control as well as internal, personal factors. Figure 1 displays these two categories with the six main root causes that the primary researcher explores in this study.

Figure 1

Root Cause Analysis of Academic Stress



The testimony from students and teachers provided evidence of the stress and the range of emotions students feel when the pressure is on. In the fall of 2020, the primary researcher interviewed two classrooms of Grade 11 students; one Advanced Placement class and a college-preparatory level class. The primary researcher also interviewed three teachers of different subjects who worked with mostly juniors and seniors, as they see the impact of the stress students feel from the college admissions process first hand. Furthermore, the process of collecting evidence for this problem of practice included reviewing results from a school climate surveys administered in 2019 and 2021, the policies of the Board of Education, and a review of anecdotal stories and questions posed during PTA meetings. Thematic analysis of these multiple sources of data revealed themes of intense pressure on students to get high grades and feelings of stress. Anecdotal input from years of conversations with teachers, parents, counselors, support staff, and administrators contributed to the institutional knowledge surrounding this subject. These multiple sources provided relevant viewpoints, opinions, and insight on the proposed problem.

Root Cause #1: College Acceptance

Among all the pressures facing high school students, the topic of college acceptance is one of the most prevalent, especially in high-performing districts like Fairfield (Prieto, 2013; Robbins, 2019). Whether it is striving for a high GPA, angling for leadership positions, acquiring volunteer experiences, or getting tutored on standardized test strategies, students spend considerable time thinking about how to impress admissions departments at competitive universities (Brown, 2016; Coren & Luthar 2014). The application process can also create stressful situations for students, such as writing a good essay, visiting campuses, or applying early decision (Lukens, 2019). Students also feel stress during the course selection process.

They may end up feeling they have to register for high-level courses like Advanced Placement (AP), even though they may not be ready for the level of rigor. This could lead to lower grades than they are used to, which in turn, creates increased pressure to work harder. Ironically, high schools have very little control over this issue since it is the colleges that are determining the criteria needed to be accepted (Jaschik, 2018).

Comments from students speak directly to this root cause. During the class interviews mentioned earlier, students shared, “We are in competition to go to a good school” and “Being a junior I feel a pending sense of doom when it comes to the college process.” The drive for college acceptance increases student stress, and parents exacerbate the situation with additional pressure.

Root Cause #2: Parental Pressure to Perform

As parents attempt to navigate how to support their child through the experience of high school, they often engage in behaviors that send strong messages to their child to prioritize high performance - mostly to increase their chances of getting into college. Parents frequently ask questions about topics related to college admissions or about school practices that impact student grades. Attendance at workshops with college admissions officers is relatively high as compared to workshops on helping teens avoid risky coping mechanisms, where attendance is usually sparse. Some parents of advanced students even feel that pushing their children to attend college early will be a sign of success (Hertzog, et al., 2021). Terms like “helicopter parent” and “snowplow parent” have emerged to describe parents who do not allow their children to self-advocate, hover over their child to check on homework, select a teen’s activities for them, or hire numerous tutors to make sure the child gets the highest possible grades (Muchnick & Curtis, 2020). Parents have students attend SAT prep classes, hire tutors to revise college essays, and do

research on strategies to help increase a student's chances of being accepted. The SAT cheating scandal of 2019 was mainly about parents looking for ways to put their child in the best light for acceptance (Shapiro and Goldstein, 2019). When questions arise about the differences between teachers, parents perceive that another teacher's practice gives a grading advantage over what is happening in their own child's class, and parents see such inconsistencies as putting their child at an unfair disadvantage. While parent involvement and partnerships with schools is critically important, when parents take a forceful role in attempting to rectify issues, the impact on the student's attitudes and behaviors may not always have a positive effect depending on the student's perception of feeling pressure (McNeal, 2014).

Students feel the pressure placed upon them by their parents and the community as a whole. In a fall 2019 interview with students about the impact of the drive to get good grades, students shared that while they can often put pressure on themselves, getting into a good college was a frequent conversation topic in their homes. One student asked, "have you talked to our *parents* [emphasis added] about this?" The student felt that by going to the source of the pressure (in his mind), one could find out more about why students feel the burden they do. During a recent discussion about revising grading practices to help ensure that student grades accurately reflect progress in the course's curriculum, public officials and parents made clear that changes should not result in compromising a student's ability to compete against other students from neighboring high-performing districts for college admission. Parent and community pressure are not the only environmental factors that contribute to student stress, however.

Root Cause #3: Teacher Practices

Teachers have a large influence on student stress levels and motivation in both what they say and what they do (Urhahne, 2015). Some teachers may tell students that their subject should take priority over others or be critical of students who appear to be unprepared, which usually instills fear in students and creates pressure to perform. Another teacher may validate students at every turn and encourage them to pursue personal interests, which may inspire students to go beyond their normal efforts. Some teachers will assign work that provides appropriate practice for the taught skills and some may assign tasks that require hours of attention without regard for how it may affect the students outside of the classroom. Teacher assignments could potentially be a significant source of stress if students want to impress the teacher, get high grades in all their classes, or not appear as if they cannot keep up with the work. Students may also perceive that teachers will view them negatively if they do not do the work assigned. Teachers can also perform actions that can reduce stress, such as provide words of encouragement, offer suggestions for further investigation, inspire actions, or help improve student performance (Stroet, et al., 2013). The choices that teachers make in the classroom can have a major impact on student stress levels.

The inconsistency of grading practices between teachers of the same course can also create stress as the students start to compare their experience with other students who have different teachers for the same course. One frequent debate in school districts is around the use of a “0” as a minimum grade. In a frequently referenced article called “The Case Against Zero,” Douglass Reeves (2004) shares how the 100-point scale creates a disproportionate penalty for zero grades since the interval between A’s, B’s and C’s is only 10 points, but the interval between a D and an F is 60 points. In this system, students may feel stressed to turn something

in to avoid a zero grade, even if the work is not their best effort. Or, after several missing assignments, students may start to disengage because of the negative impact of seeing a grade of an “F” in their grading portal every time they check their grades.

The fear of the zero or the pressure to maintain a high average may even cause students to engage in avoidance or other inappropriate behaviors. A student may rather take the risk of getting caught cheating - something he or she knows is against the rules - rather than getting a zero on an assignment or getting a poor grade on a test. On the school climate survey taken in 2019, 38% of students agreed with the statement that their peers at the school think it is ok to cheat (Fairfield Public Schools, 2019b). To have over one-third of students think cheating is acceptable indicates that the reward of maintaining or improving their grade outweighs the fear of facing the consequences of cheating.

Root Cause #4: Academic Social Status

One can classify the first three root causes discussed as environmental factors, as the influence of college applications, parental pressure, and teacher practices are all external sources of pressure that influence students. There are also personal factors that cause stress, coming from within the student, such as an individual’s pursuit of status among his or her peers. While some students may excel at sports, theater, music, art, debate, journalism, or any other extra-curricular pursuit, many students take pride in excelling academically. In a competitive system where students are comparing themselves to other students based on GPA or ranking, students become driven to shine among their peers (Li, 2017). Students may be looking for praise in the form of accolades, or they may simply be looking to belong to part of a group. High-achieving students often spend hours studying and sacrificing involvement in multiple activities, so they

can grow a connection to other students doing the same. The key to that relationship is their mutual commitment to getting high grades or other form of academic praise. However, if this drive to belong derives from a mindset of having to validate oneself, prove oneself to others, or to compete for praise, the student may be motivated more by extrinsic motivators, which are not as beneficial for long-term happiness (Froiland and Worell, 2016). Students who already feel stress about outperforming others or reject participating in challenging activities will likely continue to feel stress in the future (Schroder, et al., 2019).

Root cause #5: Self-worth and Self-efficacy

Students may also feel they need to achieve academically to feel good about themselves. If they do not perform well, they feel inadequate or disappointed in themselves. Additionally, when students are in stressful situations like those that occur in school, they may start to have a lower sense of self-worth for not handling the stress well, which can lead to poorer performance, which then leads to even lower self-esteem (American Psychological Association, 2020). In the November 2019 interview comments displayed in Table 5, contentment comes from achievement, so as long as students want to feel gratified, they have to put pressure on themselves to perform. Ironically, the drive to be happy is the thing that is causing the stress.

Research on the self-efficacy of students helps illuminate this concept more. Respondek, et al., (2017) discuss how the more students feel they have some control of their learning, the better they do in school. By doing better in school, they feel like they have more control. A sense of control over one's circumstance insulates one from feelings of futility or dejection (Bandura, et al., 1996). If students perceive school as something that happens to them and that

their efforts have no meaning or result in few positive outcomes, they will not be as successful.

In turn, student success improves self-worth and wards off negativity.

Root Cause #6: Lack of Self-Management Skills

The Collaborative for Academic, Social, and Emotional Learning (CASEL) identifies five core competencies of social and emotional learning that can help people acquire the skills necessary to live fruitful, happy lives in which their personal and social development is fully realized. Self-management is one of these, and it is defined as “the abilities to manage one’s emotions, thoughts, and behaviors effectively in different situations and to achieve goals and aspirations” (CASEL, 2022). Some of the examples of self-management skills include, managing one’s emotions, identifying and using stress management strategies, exhibiting self-discipline and self-motivation, setting personal and collective goals, using planning and organizational skills, showing the courage to take initiative and demonstrating personal and collective agency (CASEL, 2022).

If students are aware of strategies that can reduce stress and be more in control of their emotions, it is possible they could use the strategies to reduce the pressure they feel from the college process, parents, and themselves. Therefore, the lack of knowledge and lack of use of stress-reducing strategies is a root cause of student stress. As shown in Table 3, school climate survey results from the spring of 2019 indicated that students had low levels of awareness of strategies to manage stress (Fairfield Public Schools, 2019b). Student interviews corroborated this data. During a discussion with 45 students about the main causes of stress and the pressures they feel, only four students expressed that they remember being taught strategies to reduce their stress. Additionally, when asked if they felt being taught strategies would be helpful, almost all

students raised their hands. Upon a review of curriculum documents, the title of the first unit of the Grade 11 Health course curriculum is “Stress Management.” While the activities include analyzing different sources of stress and discussing about how to make good decisions to avoid unhealthy choices to cope with stress, the unit does not teach specific strategies to regulate or eliminate stress in the given moment and is more about not turning to alcohol and drugs when they feel stressed (Fairfield Board of Education, 2009). After a review, no other department curricula address this topic.

Teachers also feel that self-management skills are lacking, and therefore feel there is a need for the school to develop self-management skills. At the end of the 2020-21 pandemic-affected school year, the Fairfield Public Schools conducted a survey with its faculty asking them to comment on which areas the district should focus on to impact student success (Fairfield Public Schools, 2021b). The survey not only allowed users to answer the prompt but also to rate each other’s entries in terms of the degree to which they agree. One comment that ranked in the top 6% of all ideas was the need to make executive function skills a priority. Executive function skills are the ways in which one uses their brain for planning, focusing, organizing, and prioritizing tasks (Center on the Developing Child, 2021), which are all skills that involve self-management. Another idea that ranked in the top 9% of ideas was that SEL should be a priority in both classrooms and schools (Fairfield Public Schools, 2021b). Teachers are seeing the signs of stress among students, and report the need to recognize the importance of taking action to address this as priority issue.

Purpose and Significance of the Study

The purpose of this improvement science dissertation is to help students reduce their level of stress related to academic performance. As outlined earlier, stress has a major impact on student mental health and overall well-being, so by looking to reduce student stress this project aims to improve well-being of adolescents as they navigate their time in school. Within this overall purpose, the project aimed to accomplish a number of goals. First, students would learn actionable strategies through a classroom-based intervention with lessons focused on how to combat stress and lead a healthier life. Key questions included whether the students actually *used* the strategies from the intervention and whether they found the strategies *useful*. If the students did not apply what they learned to their lives or they did not deem the strategies worthy to ever use again, then the intervention would have been a failure. Second, this project aimed to increase the capacity of teachers to help students reduce their stress levels. Experts trained teachers and the researcher wrote a curriculum unit that could be permanently adopted into health department curricula. Being that health is required class, adoption of this curricular change would ensure that every student could receive this instruction as they make their way through high school.

Success in this area could also have longer lasting impact and help students beyond high school. In fact, finding ways to reduce stress levels is potentially a college readiness exercise. Being that college environments are less structured than high school environments and social and emotional health supports may not be as accessible (Shcheglova, et al., 2020), students need to develop strategies to cope with the inevitable stressful situations that will arise at the next level of their academic pursuits. When students finally decide their post-secondary plans, the

strategies they will learn through this improvement science project will help serve them in college as well as at many different stages of their lives.

An intervention to address stress has the potential of being high-leverage since the social and emotional well-being of the students is one of the main goals of the school and district. The district assembled a team of administrators during the summer of 2021 to begin a needs-assessment of social emotional practices within the system. Fairfield Ludlowe High School had assembled an initial SEL Planning Committee to draft a vision statement of incorporating SEL core competencies within classrooms for the 2021-2022 school year, including a focus on self-management. Success on this project could potentially create a pathway for the school, the district, and perhaps other districts in the future to adjust curricula to incorporate SEL practices directly to the students. The study was also high-leverage because it meets the criteria of having limited procedures, existing within a specific period, and the measures were practical and easily applied (Perry, et al., 2020).

Research Design

This study followed the iterative process of an improvement science project in the creation of an Improvement Science Dissertation in Practice. Using pragmatism as its research paradigm (Hinnant-Crawford, 2020), this dissertation in practice establishes an actionable problem of practice: student stress due to academic performance. It then identified theories of success through research literature and practical knowledge, built a model for achieving successful progress, practiced a testable solution found in the research, and ultimately administered a meaningful intervention to make a difference (Perry, et al., 2020). The process included an analysis of the root causes and the development of a theory of improvement to

identify the high-leverage drivers of change. The primary researcher formulated measures to ensure the intervention was working as intended and evaluated the intervention was complete (Perry, et al., 2020). The intervention underwent two iterations of the Plan-Do-Study-Act cycle over the course of 26 school days between late November and mid-January of the 2021-22 school year, and the setting of the intervention nine classrooms (Bryk, et al., 2015).

While the methodology applied the improvement science process, it also utilized elements of a practical action research project in a mixed methods intervention design (Creswell & Plano-Clark, 2018). By addressing an immediate need within the school setting, the researcher and the teachers were able to gather meaningful feedback about the chosen intervention. The study gathered both quantitative and qualitative data which the primary researcher integrated to analyze the results of the intervention. The study included process measures during the intervention to inform the staff about the effectiveness of the intervention midway through the process. Figure 2 outlines Phase 1 of the study, which includes the first iteration of the “Plan-Do-Study-Act” cycle of the improvement science project and the initial data collection of the mixed methods intervention design (Bryk, et al., 2015; Creswell & Plano Clark, 2018).

Figure 2

Phase 1 of the Study: Improvement Science and Mixed Methods Intervention Design

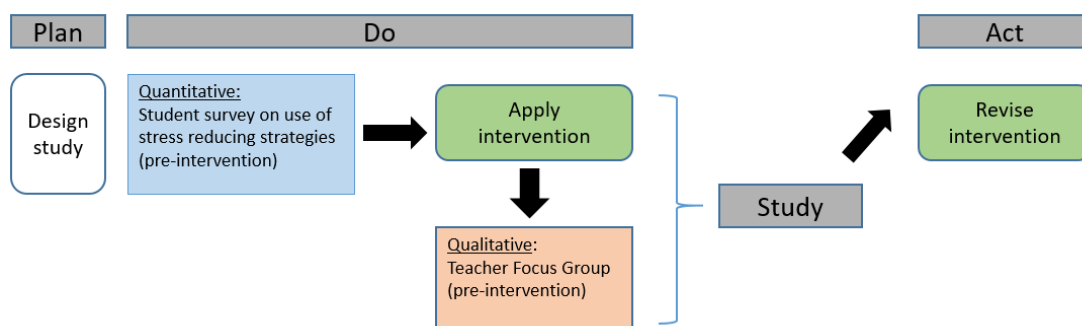
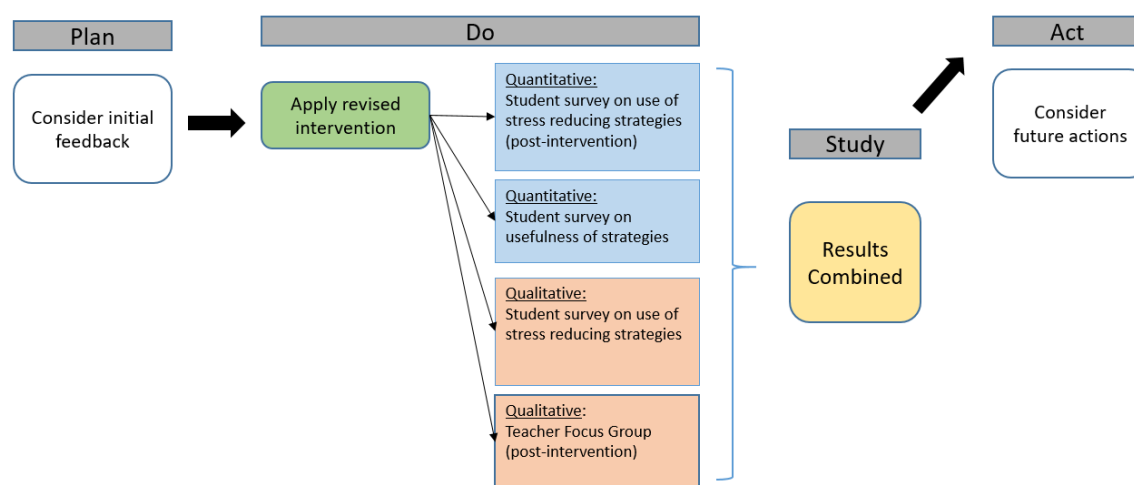


Figure 3 outlines Phase 2 of the study, which includes the second iteration of the “Plan-Do-Study-Act” cycle and additional data collection from both quantitative and qualitative sources which are ultimately combined and analyzed.

Figure 3

Phase 2 of the Study: Improvement Science and Mixed Methods Intervention Design



Target Population and Participants

The target population was all students at Fairfield Ludlowe High School, to pilot this intervention and evaluate its effectiveness, the sample population included all grade 10 students enrolled in health classes. Improvement science suggests testing at small to moderate scales when the context’s extant expertise is limited and the participants are ready for the intervention (Bryk, et al, 2015). An additional population included teachers, since the researcher sought their perspective on how well the intervention worked. Coincidentally, the health department of the district was looking to implement a new program related to student mental health. The primary researcher’s investigation of possible interventions identified one intervention with the most potential to address the problem of practice, which could be adapted to school health classes with

relatively little disruption or changes to learning objectives. Consultation with health teachers contributed to further consideration of the need to conduct a study on the effectiveness of the program as a means to reduce student stress in school. The department agreed, and the study became this Improvement Science Dissertation in Practice.

For the quantitative portion of the study, the researcher used a non-probabilistic total population sampling approach to identify the students who would be surveyed. Since the health department classes were already established, it allowed the researcher to capitalize on the opportunity to help answer the research questions by using the current health classes, and the 10th grade classes was chosen to be the sample population. The qualitative portion of the study included data from both teachers and students. The teacher sample was purposeful and homogenous, as it included the four health teachers in the school. The student sample was also purposeful and homogenous since, as in the quantitative sample, it includes all the students in enrolled in grade 10 health classes.

Procedures, Data Collection, and Data Analysis

As depicted in Figures 2 and 3, the project included two phases that encompassed two cycles of the “Plan-Do-Study-Act” process of improvement science. Students were surveyed prior to the intervention and then again at the end of the intervention. Teachers engaged in focus group interviews at the midpoint of the intervention and then again at the end of the intervention. The first teacher focus group informed changes to the intervention, such as making the lessons less content based and more activity based. After the intervention, the students answered additional questions beyond what was on the pre-intervention survey to extract deeper insight as to their perceptions of the effectiveness of the intervention.

Quantitative data included the pre-intervention survey which included a set of 10 closed-ended questions that asked about whether students used the strategy in practical situations. The primary researcher asked the same 10 questions after the intervention and then analyzed the results with inferential statistics to determine if the intervention was effective. He then gathered more quantitative data from the post-intervention survey with closed ended questions about student opinion on the usefulness of the strategies.

Qualitative data included the results of student answers to open-ended questions about which strategies they used and which they found helpful. Additional qualitative data came from analyzing the two focus group interviews with the teachers. The primary researcher coded and analyzed the transcripts of the conversations for themes related to the teachers' perceptions of student use, how useful they found the strategies as teachers, and thoughts about the how the students perceived the delivery the curriculum.

Being a mixed methods design, the primary researcher considered the data from all aspects of the study by comparing and combining the data and themes that emerged from the qualitative results with the quantitative results to provide a broad picture of the successes and limitations of the intervention.

Research Questions

As discussed further in Chapter II, the intervention chosen by the primary researcher is a curriculum called Dialectical Behavior Therapy Skills Training for Emotional Problem Solving for Adolescents, or DBT STEPS-A. Teachers delivered the curriculum to students in grade 10 health classes with the hope that students will use the strategies out of class as well as find them useful.

Research Question 1

To what extent is a partial implementation of the DBT STEPS-A curriculum an effective way of teaching stress reducing strategies to high school students?

Sub-question 1. How likely is it that high school students use the DBT strategies they learn in the general education setting?

Sub-question 2. How likely is it that high school students find DBT strategies useful?

Research Question 2

To what extent do teachers believe using the DBT STEPS-A curriculum is an effective way of teaching stress reducing strategies to high school students?

Limitations of the Study

A number of limitations to this study warrant further discussion. The first is the construct validity of the quantitative measurement instrument. Although the survey questions about usage were modeled after an established instrument (See Chapter III), the primary researcher created most of the survey questions. The scope and timing of this project did not allow for the opportunity to use a different population on the same instrument or the same population on a related instrument in order to provide strong evidence of construct validity. A testing threat to internal validity may exist since the students answered ten questions both before and after the intervention and they may have learned something from the first round of testing to change their answers on the second round (Martella, et al., 2013). Additionally, a history threat may exist as the students may have been learning stress reducing strategies in other settings while receiving the intervention (Martella, et al., 2013). To help increase validity of the qualitative results, the primary researcher shared the transcript of the post-intervention teacher focus group interview

with an outside colleague who was also working on his dissertation in practice on a different subject. While this resulted in a high degree of inter-coder agreement for this set of data, the primary researcher did not share the data from the 630 student responses to the open-ended questions from the post intervention survey, as this sample was too large. A final limitation was that the post-intervention survey took place one week before students took their midterm assessments. Traditionally, this time is a significantly stressful for students, and this may have increased the opportunity to utilize the stress reducing strategies and allow them to respond to questions of use and usefulness in a different way than if the intervention took place at a different time of the school year.

The Researcher and the Problem

The primary researcher and author of this dissertation is the head principal of the school in which this study takes place, so positionality plays an important role for this project. When people ask me what is the biggest change I have seen in my 30 years of being an educator, my main answer is the massive increase in the levels of stress that students feel and the social, physiological, and academic problems that manifest from high rates of anxiety. As someone who has devoted his life to helping adolescents grow through their schooling, I see academic stress and mental health on an equal playing field with other issues that threaten student well-being and tend to get more attention, such as drug and alcohol use or bullying. Finding a viable solution to this problem has been a priority for me, so therefore it is important to acknowledge that this may influence the research. Use of the improvement science methodology helps compensate for this, for it assumes there are aspects to any intervention that require improvement

and it requires a wide range of feedback to discover and evaluate these improvement areas so as not to be blinded by initial promising results.

Being that I am the head principal of the school, there is always the chance that this position of power may influence how the teacher and student participants responded to the surveys and interviews conducted by me as the researcher. I have attempted to remove this influence in a number of ways, such as giving all participants a chance to opt-out of the study, or explaining how as a research project, the goal is simply to record people's opinions, not attempt to arrive at a desired result. However, I have to recognize that I am not aware of how the participants will see themselves in relation to my involvement in the project. Some may not be truthful with their answers because they feel they do not want to disappoint, while others may fear authority. Besides being a visible figurehead of the school, others may be reacting to my identity as a European-American white male in my 50's based on their own background and past experiences. While I cannot pinpoint or identify a specific instance in which this was the case, I also cannot rule out that it was not a factor. At every turn, I have tried to be cognizant of these potential influences and encouraged honesty, provided anonymity wherever possible, and ensured all participants were free to participate or withdraw without ramifications.

Chapter II: Review of Scholarly and Professional Knowledge

The Impact of Stress on Students in the School Setting

Chapter I highlighted how stress affects the sleep patterns, potential for risky behaviors, and mental health of high school students, but stress also has a negative impact on a student's performance in the school setting. Students who feel high levels of anxiety tend to underachieve in school, and students who perceive they are depressed or anxious have difficulty concentrating and completing school-related tasks (Bernal-Morales, et al., 2015). A child's working memory, ability to apply flexible thinking and apply self-control are all cognitive skills collectively referred to as executive functioning (Low, 2020). When stress compromises executive functioning, students encounter even further academic challenges (Humensky, et al., 2010). Academic performance, such as Grade Point Average (GPA) is not directly correlated to well-being (Bücker, et al., 2018), but some studies document a relationship between stress and how confident students feel about their academic performance and overall happiness within the school setting (Feld and Shusterman, 2015). A longitudinal study of secondary students in Hawaii who reported symptoms of stress and depression also struggled more in school than their peers (McArdle, et al., 2014).

The impact of stress on academics can affect all students, but the source of the stress may impact the best way to address it. For some students, events that are not connected to the school may unsettle a student's emotional state and have a detrimental effect on the student's well-being (Shaughnessy, et al., 2018). These can include environmental factors such as the illness or death of a close family member, a divorce or relationship issue in the student's immediate family, or other trauma-inducing event that takes away a student's focus at school. Spiegel (2017) found

that adolescents enrolled in a school that treats students with significant behavioral problems and high rates of absence have significant external sources of stress, such as gang involvement, family dysfunction, or chronic mental health histories. In turn, these students have higher levels of stress and perform poorly in school (Spiegel, 2017). While these external sources of stress certainly affect high school students, the primary focus of this project is school-generated stress.

The setting of a high school is a major contributor to student stress levels. Stress is generated through the internal process that occurs when students perceive they no longer have the capacity or resources to cope with the challenges they are facing (Shaughnessy, et al., 2014). “Perceived stress” is particularly elevated for students in a high school setting, since the disruption caused by changing biological factors related to adolescence coincide with the pressure felt from more rigorous tasks associated with high school curricula (de Anda, et al., 2000; Anniko et al., 2019). The American Psychological Association (2014) confirmed these findings in reporting that 83% of adolescents reported school to be their number one stressor. As students proceed through high school, one might think they become accustomed to the pressure of teachers’ expectations or completion of more challenging tasks. However, the toll of high stakes testing and the pressure students feel to get high grades and get into college ramps up levels of stress, especially in the final years of secondary schooling (Wuthrich, et al., 2021). Brain research informs the connection between adolescence, high school, and higher levels of stress, indicating that the reward system of the brain develops faster than the prefrontal cortex, which controls rationale thinking and behavior regulation (Sanger, et al., 2016). School dominates an adolescent’s life, and if school is a frequent source of not meeting one’s goals, then the output of the pleasure hormone dopamine output is suppressed (Petibone, et al., 2015). Students miss out on the positive effects of the hormone and do not satisfy their reward craving.

Combining the suppression of rewards with an immature prefrontal cortex can trigger depression for students who are already feeling stressed and doing poorly in a school environment (Sanger, et al, 2016).

To compare the target school of this study, Fairfield Ludlowe High School, to other high schools, the researcher conducted environmental consultations with three area schools. This paper will refer to them as Alpha High, Beta High, and Gamma High. Alpha High is in the same District Reference Group as Fairfield Ludlowe (DRG B), and Beta and Gamma High Schools are in DRG A. Since there are nine total District Reference Groups, the four schools share relatively similar high socio-economic status of their student populations (Connecticut State Department of Education, 2006), as well as similar demographics around minority and ethnic percentages.

After interviewing school officials and counseling staff, the three comparison schools universally report very high rates of student stress which influences their school performance. Evidence includes extremely high rates of referrals to counselors, psychologists and social workers in all four schools from teachers, coaches, and parents. This is a trend seen increasingly in schools across America (Suldo, et al, 2018). Usually, a visit to the counseling center means that the student is absent a scheduled class, resulting in missed instruction or failure to take an important assessment. Another common theme across all four schools was how large numbers of students are initiating the request for supports and self-reporting that they are struggling with stress and anxiety. Both Ludlowe and Alpha High shared how students used the term “mental health” as its number one priority when asked how the school can better support their needs during “town hall”-type discussion sessions in the spring of 2021. Beta High shared that they are seeing more students seeking professional help both inside and outside of school by asking to

visit the school counseling center or bringing reports of evaluations by outside therapists.

Gamma High commented on the higher numbers of nurse visits, where students can just lie down to deregulate or take a break from a class. This trend aligns to the results of a national survey where seventy-five percent of the 21,678 high school students surveyed reported negative feelings, the majority of which were tied to being stressed, tired or bored (Moeller, 2020). As further evidence of the impact of stress, Alpha and Beta High Schools shared how recent graduates are connecting with their former counselors and reporting they needed to take a break from their first year of college because they could not manage the stress they were feeling. Gamma High school reports that current students report being sleep-deprived because they are staying up late to complete course work – and this is even after implementing a later start time to try to address that problem.

Adult Contribution to High School Student Stress

The adults in a student's life also contribute to the level of stress that they feel. The three largest sources of stress from adults are the system of college admissions, parents, and school-based personnel, such as counselors and teachers.

At Fairfield Ludlowe and the three comparison schools, students feel their parents and the community hold them to a high expectation to get into a prestigious college and the associated stress surrounding that process is a prevalent theme. Since getting a high GPA and high SAT scores are factors in getting accepted, the schools report students being obsessed with their grades and scores, which is not unlike many high school student experiences around the country (Brown, 2016; Prieto, 2013; Robbins, 2019; Roome 2018). The process has become highly competitive, where the average number of schools that students apply to has increased but the

acceptance rates at top colleges has not changed (Grant, 2020; Jaschik, 2018). All four high schools see students taking on the most rigorous course load possible, including multiple AP courses, with the perception that they are increasing their chances at acceptance. Jaschik (2018) quotes admissions officers who are well aware that advanced courses are a significant source of stress, but they do not change their message to students because the universities are looking to attract the most dedicated and successful students. Taking college entrance or advancement exams to prove what one has learned is a major source of stress for students (Roome, 2018). All four local high schools described how they purposely avoid putting any events in the first two weeks of May so as not to distract or add to the stress of students during the AP Testing window. In addition, multiple publications that produce lists of the “Best Colleges in America” (Niche, 2021; U.S. News, 2021) get a lot of attention and students begin to measure their own self-worth based on whether they think they can get accepted to these top-rated schools (Prieto, 2013).

Parents are another major contributor to the stress facing adolescents. The four local high schools contributing to this study are districts with high-socioeconomic status, which means that many of the parents have attended universities and have relatively stable sources of income. Beta High speculated that this factor contributes to parents having high expectations that their children will follow suit. It is a common perception that future salaries will be higher if the students attend a top-ranked college (Prieto, 2013). Beta and Gamma High Schools shared how parents will often override the school’s recommendation for what courses students should take to ensure that the transcript will have a number of honors and AP level courses, which parents feel will impress college admissions boards. Ludlowe and Alpha High Schools no longer require teacher recommendations for rigorous courses and rely now on educating students to pick the appropriate level themselves, which eliminated the frequent practice of parent overrides.

School counselors and counseling departments from the four high schools point to the tension they feel between the parent pressure to ensure their child's success and advocating on behalf of the child's well-being. A counselor at Alpha High described how parents will call about a class their child is struggling in and request that the counselor "fix it" with the teacher, which usually means brokering an accommodation or extension –or just outright changing the grade. Ludlowe counselors report that parents will often ask them to push their child to take higher-level courses so their transcripts will show they challenged themselves. At Beta High, the lead counselor expressed that counselors feel they contribute to the pressure even more when students express they have aspirations for a certain program or major and counselors must guide them toward more rigorous courses to improve their candidacy. This tension between parent expectations and students enrolling in courses that bring on high levels of stress is not unique to these schools (Baum & McPherson, 2011; Feld & Shusterman, 2015).

From a systemic view, district and state policy also contribute to this pressure. The graduation rate of high schools is a high-profile data point. High school principals in Connecticut are required to make improving the high school graduation rate one of their professional goals every year (Connecticut State Board of Education, 2017). To achieve their professional goals, administrators may then place pressure on counselors to meet with students who are in danger of not graduating. As the counselor from Alpha High said, he is turned from child advocate to "drill sergeant" by staying on top of the student's every move to make sure the student completes all the tasks required by the teachers.

Teachers are another important adult influence who contribute to students feeling academic stress (Gallaway, et. al., 2013; Kunnath, 2017). Staff from Ludlowe, Alpha and Beta

High Schools point to inconsistent grading practices between different teachers. Although all courses at Fairfield Ludlowe apply the same percentages to each component of the final grade, (*i.e.* course work, midterm and final exams), teachers have autonomy in deciding things like how much homework to assign, whether to allow test re-takes, whether to assign zero grades, and make-up policies for missing work. This inconsistency can be very confusing for students, and trying to remember the different practices used by staff just adds to the stress caused by meeting deadlines and performing at a high level.

Teachers may also use grading practices as a reward and punishment system rather than solely a way to communicate progress (Kohn, 1993; Winger, 2005; Beachboard, 2020). Winger (2005) argues that students suffer when teachers use grades to measure a student's compliance at completing tasks rather than to give accurate feedback about their learning. A classic use of punishment through grades is the threat of a zero grade if students do not complete assignments (Reeves, 2004; Feldman, 2018). For high achieving students, the fear that their grade will suffer tremendously may cause them to stay up late and get less sleep, miss a meal, or copy another student (Pope, Brown, & Miles, 2015).

Teachers may be willing to support student social emotional needs, but this could come at some cost. For instance, a teacher willing to meet with counselors to find out if a student is experiencing trauma in order to provide some leeway on due dates or the size of an assignment will end up sacrificing planning or grading time, which affects many students instead of just one. Other teachers want to hold all students accountable to the same standard in the name of "fairness." Alpha High shared a story where one department decided that consistency between its teachers was a high priority, but this came at the sacrifice of allowing exceptions when the

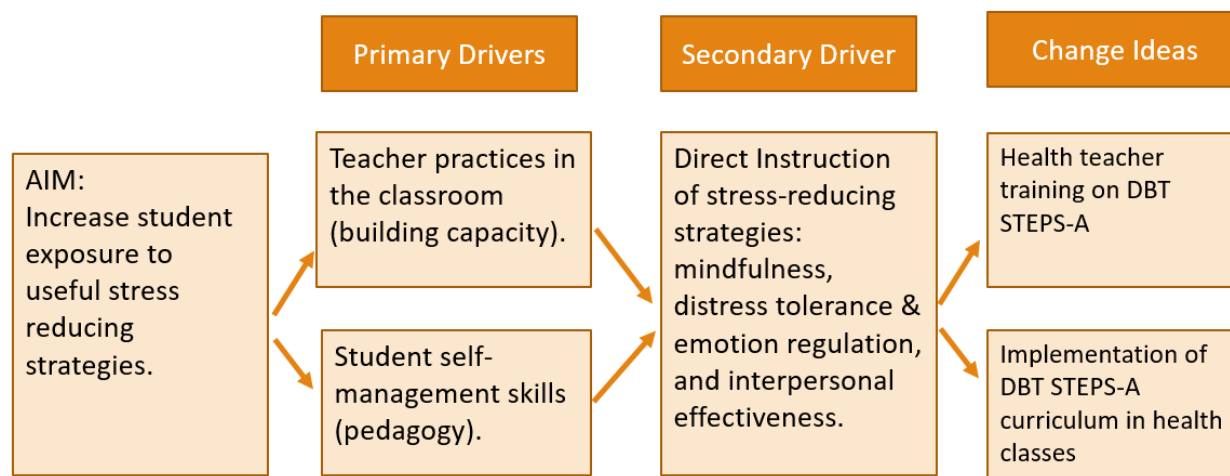
students struggling with mental health needed a break. Teachers are also susceptible to the pressures of maintaining a rigorous classroom from other sources. Gamma High shared a story where a young teacher expressed concern about teaching a deep-breathing calming technique for fear that an administrator would walk by and wonder why the students were not engaged in something more rigorous. Beta High School reported that parents will directly contact teachers to complain that their curriculum is not rigorous enough. At one public meeting in a local district, a town official lamented that her child's teacher needed to assign more tasks so the students had more opportunities to raise their grades rather than focus on the fact the teacher was trying to manage the students' workload to relieve their stress. Hearing comments like this may cause some teachers to abandon their willingness to help students manage stress and focus instead on the academic rigor.

Drivers for Change

In order to address the problem of practice of high school student stress, the aim of this project is to increase student exposure to useful stress management strategies by the end of a semester course. This project hypothesizes that the two major drivers that may affect change are the implementation of practices focused on stress-reducing strategies by teachers and the development of student self-management skills in regulating stress (See Figure 4). A secondary driver that helps us understand how this will happen is the direct instruction of multiple stress-reducing strategies in the general classroom setting, such as mindfulness, distress tolerance, emotion regulation, and interpersonal effectiveness. This project will examine whether the change ideas of training teachers and implementing a DBT curriculum in health classes will achieve the aim.

Figure 4

Diagram of Primary Drivers, Secondary Drivers, and Change Ideas



Working Theory of Improvement

Root Cause Analysis Findings

By reviewing the root causes discussed earlier in the context of the literature and school experiences reviewed in the previous section, a clearer pathway of reducing student stress through direct instruction of stress-reducing strategies begins to emerge. The causes of the stress students feel to perform academically come from both external influences, which are things that happen *to* a student, as well as internal influences, or pressures felt *within* the student's perception. External pressures include the expectation for students to attend a competitive college, parental pressure, and teacher expectations. Internal influences include the need for self-worth, a desire for social status, or the lack of knowledge to manage stress. Applying an effective intervention that addresses all of these root causes is not feasible within the scope of this project and in some cases, not easily performed in a school setting. Choosing the best path to reduce stress must be strategic and attainable in a school setting.

Hinnant-Crawford (2020) suggests viewing causes through the lens of categories that help one to determine the source. From there, school staff can determine the high-leverage drivers strategically based on which sources the staff can influence the most. These categories of sources include structural causes (societal systems), organizational causes (design of the context), policy causes (the rules in place), ideological causes (belief systems), capacity causes (abilities and skills of practitioners), historical causes (influence of the past), resource causes (money, time, or people), and practice/pedagogical causes (what the teachers do). Each category helps a researcher place a root cause in context to analyze the potential of having impact for change. Using this lens, the root cause of the pressure to attend college is historical in nature, as the college admissions process has long been determined by colleges themselves through formulas unique to each college (Umhofer, 2015). It is also structural, as students hear the message that they need to go to college in order to be successful (Lukens, 2019). From the standpoint of affecting change, it would be hard for a high school to influence these factors. Parental pressure is as an ideological factor, for many families in the community place a high value on attending college as demonstrated earlier. Students' personal drive to achieve social status or desire for self-efficacy through getting high grades is a structural issue since students are acting within a system that requires them to compete with others and look to find belonging in the niche of the highest achieving students. These could also be considered ideological causes because students may have come to believe that their only pathway to success is through high academic achievement. Similar to the cause of college pressure, it will be extremely difficult to challenge these long held systems and beliefs within a school setting within the confines of a focused action research project such as this.

Addressing the root causes of teacher practices and addressing student self-management skills are the most strategic and attainable ways to reduce stress. From the lens provided by Hinnant-Crawford (2020), teacher practices that increase stress is a capacity issue, as school-based staff may lack the knowledge and skills to teach how to reduce student stress. Furthermore, some of the reasons students are lacking self-management skills are because the students are reporting that they have not been taught stress-reducing strategies (Fairfield Public Schools, 2019b), and this was confirmed when finding no evidence within curriculum documents. This is a pedagogical issue under the Hinnant-Crawford model (2020), as the system is not providing teachers the training to learn these important skills to pass on to students. Capacity building and implementing pedagogical practices are strategic approaches because these things happen within a school context all the time. While teachers may play a part in the process of changing societal systems or individual belief systems, success takes many years of incremental change. As shown in Figure 4, building staff capacity and influencing pedagogy will be the primary drivers for change to reduce student stress, and staff can successfully accomplish these with professional development, time to plan, and adequate resources to implement the lessons.

Strategies to Mitigate the Problem

Before landing on a specific approach, it is necessary to review a number of ways that schools have tried to reduce stress for their students. To do this, it is helpful to review information from the research literature as well as the practices of professionals from various local high schools.

Mindfulness Practices. Mindfulness has garnered significant attention in literature as a potential strategy to reduce stress in school settings (Dunning, et al., 2019; Gutierrez, et al., 2019; Mrazek, et al., 2019; Sanger, et al., 2018; Titone, et al., 2018; Wigelsworth & Quinn, 2020). Many mindfulness-based stress reduction (MBSR) interventions evolved from the work of Jon Kabat-Zinn (1990, 2003), who defines mindfulness as being fully present to notice one's thoughts, be aware of one's senses and emotions, not dwell in the past or future, and relax one's body without making judgements or reacting out of urges. Educators now have a number of mindfulness programs to choose from, including Calmer Choice (Gutierrez et al., 2019), Foundations (Sanger, et al., 2018), Learning to Breathe (Kielty et al., 2017), and even some digital delivery systems (Mrazek, et al., 2019). When discussing the benefits of mindfulness, the literature pairs stress reduction with positive academic performance (Gutierrez, et al., 2019), an increase in growth mindset (Mrazek, et al., 2019), as well as an increase in self-awareness (Titone, et al., 2018). Dunning, et al. (2019) conducted a meta-analysis of all studies that used randomized, controlled trial designs to counter claims that the enthusiasm for mindfulness has outpaced the evidence of its effectiveness, but their findings concluded that students involved in MBSR programs showed significant reduction in stress and depression. Although there is documented success of mindfulness with adolescents aged 14-18 (Dunning, et al., 2019; Sanger, et al., 2018), some sub-groups may not realize a positive impact. Students receiving special education services did not show a reduction in perceived stress from mindfulness (Solar, 2018). Additionally, teachers might speculate that mindfulness can be helpful to reduce student stress or their own stress (Titone, et al., 2018), but unless teachers receive comprehensive training they will not develop a full understanding of mindfulness and may not be willing to give up time to implement a program with fidelity (Wigelsworth & Quinn, 2020).

Art Therapy. Art therapy combines the building of social emotional skills with the creation and expression of art to help students process emotions and manage stress (Campbell, 2021; Lindsey, et al., 2018; Montgomery, 2018). Similar to mindfulness, producing artwork requires someone to have a single-minded focus (Millam, 2017), which in turn can foster self-awareness and the self-control necessary to release emotions in a more measured state (Campbell, 2021). Student cortisol rates drop when drawing and painting (Kaimal, et al., 2016), which allows the student to relax and pave the way for clarity when processing emotions (Campbell, 2021). More traditional therapy sessions rely on the words and stories of the students, while art therapy can be beneficial for students who lack vocabulary skills or are just better at expressing themselves in an artistic format instead of through words (Lindsey, et al., 2018). As a potential form of self-care that is easy for students to access, art therapy is satisfying for students because they are distracted from stressful thinking and can receive a boost of self-confidence in creating meaningful work (Montgomery, 2018; Scott, 2020a). One limitation is that schools may only have the time and resources to create opportunities for students to make art, such as through art classes, the library media center, classroom breaks, or in advisory (Millam, 2017), but not all students will have access to this. One study documented how art therapy can also be stressful for some students who feel self-conscious about their skillfulness in art (Montgomery, 2018). Also, schools may be unable to provide access to a therapist who would help interpret the work, teach important coping skills, and work through the emotional challenges the student is facing (GoodTherapy, 2016).

Fostering Intrinsic Motivation. Intrinsic motivation occurs when a student engages in a behavior because she or he finds it naturally satisfying and not to earn a reward or to avoid a punishment (Cherry, 2019). Students who pursue activities for the feeling of enjoyment do get

rewards, but they come in the form of a sense of belonging, a sense of progress, or a sense of competence in a new skill. The way in which fostering intrinsic motivation can reduce stress is that it moves students away from focusing on grades, which is one of the main causes of academic stress, (Garn & Jolly, 2014; Mathewson, 2019). Unfortunately, many schools use grades to reward students for compliance in doing homework or studying a specific document, which stifles student creativity and emphasizes the process of getting a good grade over the process of learning (Winger, 2005). Alternatively, when students have autonomy through having a say in how they learn and they have a sense of purpose by working toward a worthwhile goal and engaging in important work, students feel a greater desire to learn and a dedication to the tasks they complete (Beachboard, 2020). Task design is crucial in fostering intrinsic motivation. Assignments that require real-world, hands-on problem solving where students tackle open-ended assignments and choose what and how they study and demonstrate their learning with concrete products are often the most motivating and ones in which students recognize the importance of their work and tend to worry about the grade (Mathewson, 2019). Ludlowe High School created a task-analysis rubric so that teachers would be able to assess whether their assignments incorporated elements that foster intrinsic motivation. For example, teachers indicate whether the task presents students with a goal to work towards in an authentic context, whether the task is open ended, whether it requires the students to make judgements, and whether students get to make choices in the project. Beta high similarly pointed out that the administration and curriculum department are placing an emphasis on creating performance-based assessments so students have choice and more enjoyable assessments than traditional tests. Both schools indicated some success in these areas in the form of feedback from students about their preference for these assessments. While practices that foster intrinsic motivation may help

prevent students from experiencing stress related to assessments and grades, it does not help students deregulate or help students manage stress they already feel. Additionally, some students and parents will focus on the extrinsic reward of grades and not the intrinsic value of learning the material.

Emotion Regulation Strategies. The main goals of emotion regulation programs are to help students understand how stress symptoms come from biological functions, and once students better understand the emotions they are feeling, they are better able to manage them (Mazza, et al., 2016). A number of programs have emerged that focus on emotion regulation strategies, including StressOFF Strategies (Carsley, et al., 2018; Shapiro & Heath, 2014), Strong Teens (Caldarella, et al, 2019; Merrell, et al., 2007), Motivation, Assessment and Planning (O'Brennan, et al., 2020), Study without Stress (Lowe & Wuthrich, 2021) and RULER, (Brackett, 2019) to name just a few. These programs have a common theme of providing adolescents a method to first recognize the emotions they are feeling and then identify a variety of strategies to use to regulate those emotions. Some focus heavily on thought suppression and volitional control of disruptive thoughts, (Imhof & Schulte-Jakubowski, 2015; van Genugten, et al., 2017). Additionally, there is an emphasis on building resilience, managing social pressures, setting goals, problem solving, and positive thinking (Caldarella, et al., 2019; Lowe & Wuthrich, 2021; O'Brennan, et al., 2020). In most cases, counselors, social workers, or other support personnel outside of the general education classroom are the main agents delivering the skills training (Caldarella, et al, 2019; Imhof, et al., 2015; Lowe & Wuthrich, 2021; O'Brennan, et al., 2020). A few programs attempt to deliver the skills universally to a targeted population, such as a particular grade level (Carsley, et al., 2018) or Physical Education classes (Lang, et al., 2016) or to all students in a smaller setting such as an alternative program for at-risk teens (Spiegel,

2017). A common approach for the local schools surveyed for this project was the delivery of emotion regulation strategies through advisory programs, which are structured, regularly scheduled periods during the school day where teachers can deliver lessons on academic, social, or future-planning issues (Glossary of Education Reform, 2015). Ludlowe, Alpha, and Gamma High Schools all provide monthly advisory lessons and Beta High schedules weekly sessions. The schools report that the main topics addressed in advisory revolve around community building and emotion regulation strategies such as positive thinking, where to turn for support, or expressing gratitude. One of the drawbacks of advisory is that the students find the topics to be disconnected or randomly inserted into their daily flow and thus find it hard to process properly. Another potential issue with emotion regulation programs as a stand-alone intervention is that the students may already be dysregulated to a degree where they are unable to be fully present to learn and absorb the strategies. They must first build the ability to gain control of their present situation and reduce the urge to act impulsively.

Dialectical Behavior Therapy - Skills Training for Emotional Problem Solving for Adolescents (DBT STEPS-A). DBT STEPS-A is designed as a universal curriculum for all students that focuses on teaching the skills to manage stress through regulating emotions, practicing mindfulness to reduce impulsive behaviors, solving problems, and maintaining effective relationships (Mazza et al., 2016). Marsha Linehan (1993) first developed Dialectical Behavior Therapy (DBT) as a way to treat adults with suicidal ideations or borderline personality disorder. Rathus and Miller (2002) later adapted DBT to focus specifically on suicidal adolescents as they identified this group as particularly lacking in the skills DBT targeted to increase the capacity to cope with stress. Research verified the effectiveness of DBT (Mehlum, et al., 2014; Valentine, et al., 2020), and school systems started to see the value in training staff

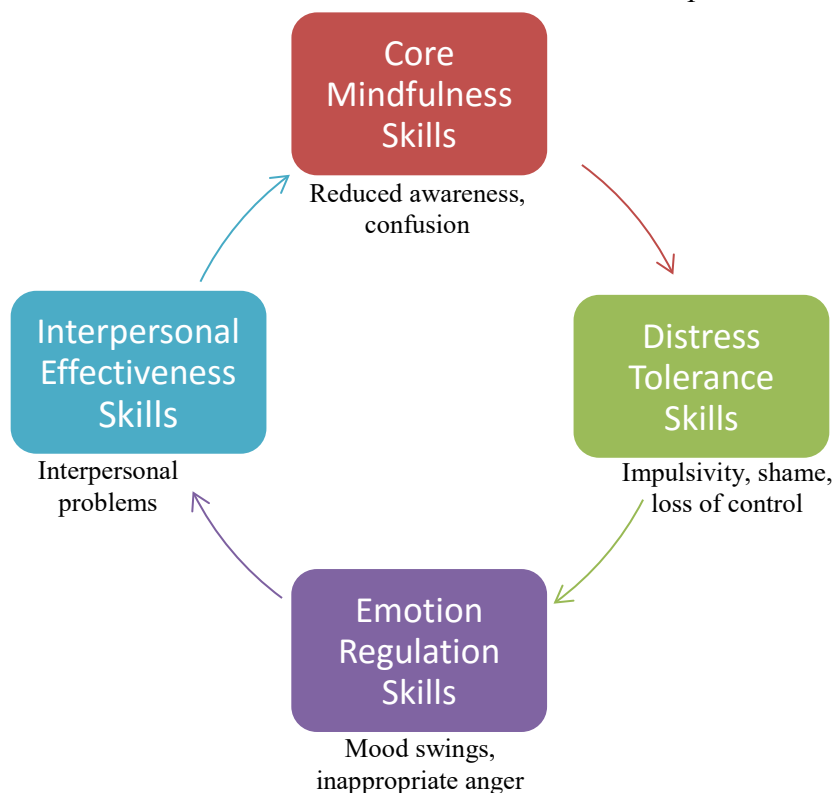
to implement DBT programs to support students struggling to regulate their emotions (Mazza et al., 2016; Miller, et al, 2020). Initially, practitioners considered DBT a Tier II or Tier III intervention, which targets small groups of students supported by a specialist within a classroom (Tier II) or pulled out of the classroom (Tier III) to be given more intensive supports (Hanson, 2016). The state of New York recommended DBT as a Tier III intervention for all its districts (Miller, et al., 2020), but this is considered the most intensive and individualized intervention for a small percentage of students (Durtschi, 2019). This form of DBT is called Comprehensive School-based DBT (CSB-DBT), and it includes weekly individual counseling, weekly group counseling, targeted skills training, a weekly provider consultation team meeting, and a monthly parent skills review (Miller, et al., 2020). Mazza, et al., (2016) recognized that the skills training could prove beneficial for all students to help them manage the stress they face in school and created a curriculum of 30 lessons delivered in 50-minute sessions implemented over 30 weeks. The authors make a point of saying the lessons can be adapted to different lengths of instructional periods and in a variety of educational settings, such as required courses, electives, or a part of Health classes (Mazza, et al., 2016). The authors refer to this curriculum as Dialectical Behavior Therapy Skills Training for Emotional Problem Solving for Adolescents, or DBT STEPS-A.

DBT STEPS-A is founded on concepts from Linehan's (1993) work with DBT, including biosocial theory, which explains why teens exhibit certain "problem" behaviors (Doughty, et al., 2021). Biosocial theory highlights how the teenage brain is predisposed to emotional vulnerability due to its inability to regulate emotions (Linehan, 1993). At the same time, adolescents encounter an invalidating environment (often schools) where they feel rejected, receive no positive reinforcement, or feel inferior to others (Doughty, et al., 2021; Mazza, et al.,

2016). The combination of the biological processes and environmental factors lead to increased levels of stress for adolescents. This translates into a number of problems, such as reduced focus, confusion about sad feelings, impulsivity (manifesting as school avoidance, defiance, or obsession), mood swings, inappropriate expressions of anger, interpersonal issues, and non-dialectical thinking where all situations are “black or white” (Doughty, et al., 2021). The developers designed the lessons of DBT STEPS-A to teach skills to help teens replace the negative behaviors with more positive approaches. As outlined in Figure 5, the core skills include mindfulness, distress tolerance, emotion regulation, and interpersonal relationships (Mazza, et al., 2016; Doughty, et al., 2021). By learning and applying these skills, high school students will feel less stress, regulate their emotions, and have greater overall well-being.

Figure 5

Adolescent Problem Behaviors and the DBT STEPS-A Skills to Replace Them



DBT STEPS-A as a High Leverage Strategy

Among the five strategies discussed, DBT STEPS-A has the potential to have the greatest impact for a number of reasons. DBT has a proven track record of success in improving discipline and absenteeism, reducing depression and anxiety, and decreasing social stress and instances of non-suicidal self-injury (NSSI) (Doughty, et al., 2021; Flynn, et. al., 2018; Zapolski & Smith, 2017; Hanson, 2016; Valentine, et al., 2020; Mehlum, et al., 2014). The teaching of DBT skills to adolescents decreases their intentions to engage in risky behavior (Zapolski & Smith, 2017) and results in significant reduction in measures of depression and the stress students feel on a day-to-day basis from school and social environments (Flynn, et al., 2018).

Additionally, the general classroom setting is ideal for the delivery of social and emotional supports for students in terms of access, quality, and cost. Once the teachers are trained, any student will have access to the skills if they take the course offering provided by the trained teacher (Miller, et al., 2020). For instance, Gamma High School created a half-credit semester-length elective offering, taught by a social worker, for which any student can register. Beta High shared that their district trained middle school counselors in DBT STEPS-A and the counselors push into scheduled health courses. Ludlowe and Alpha High are training all of the teachers in the health department in order to deliver the skills instruction through a course that every student is required to take for a graduation requirement. In each of these cases, a certified staff member whom the school district has vetted through their hiring process is the one delivering the curriculum. This is another important advantage of using DBT STEPS-A in schools, since the likelihood of having a high quality instructor who has a background in the mental health needs of adolescents is much higher than hiring a private practitioner (Miller, et al., 2020). Additionally, once a public school district pays for the training and materials

associated with DBT STEPS-A, there is no separate cost to families (Miller, et al., 2020). By virtue of having access to the services and courses provided by the public school system, students can learn these stress-reducing skills *en masse*. Not only is individual counseling costly to families, outside therapy for teens often involves a commitment from the family to participate on some level, whether through initial on-boarding or occasional family-based sessions (Mazza, et al., 2016). This can pose a significant challenge for single or working parents. Students receive DBT STEPS-A in the classroom, and therefore the skills training focuses primarily on the students and does not require involvement from a wider circle of the teen's life.

From the standpoint of equity for adolescents who come from poor and traditionally marginalized families, DBT STEPS-A delivered in high school classrooms can provide necessary services they usually cannot access. Low socio-economic status is correlated to poor health and higher potential of mental health issues, and at the same time, these families are less likely to have access to reliable or affordable mental health support (Hodgkinson, et al., 2017). Low-income families may be limited in accessing insurance which could offset the cost of mental health supports for children. Even if families in poverty receive coverage from their employers, mental health providers do not often participate in managed health care plans (Anxiety & Depression Association of America (AADA), 2021; Center for Disease Control and Prevention (CDC), 2021). Districts that implement DBT STEPS-A in a general education setting are providing free access to mental health supports to all of its students.

Wide scale implementation of DBT STEPS-A can also provide added benefits to the school environment and save the administration time in dealing with conduct issues (Mazza, et al., 2016). Disciplinary problems often stem from impulsive actions, overt expressions of

intense emotions, or defiance because of a dysfunctional relationship, which are all behaviors DBT STEPS-A targets to replace with actions that are more appropriate. If these situations decrease as a result of the skills instruction, the administration will save the time spent meeting with the students, interviewing teachers to investigate, conveying messages to parents, overseeing the consequences, and potentially developing individualized education plans through specialized instruction (Mazza, et al., 2016; Miller et al., 2020). Consequences such as suspensions will mean time out of the classroom, so now staff have to spend additional time and resources providing alternative instruction or helping the student make up the lost learning. Studies show that disciplinary referrals decreased and attendance increased in schools using CSB-DBT (Miller, et al., 202; Mason, et al, 2011). If students know how to regulate their behavior, this can translate into the district saving money or time (Mazza, et al., 2016; Miller, et al., 2020). If the behaviors are extreme, the district may also have to investigate out-of-district placement in a facility better equipped to manage the behaviors at a considerable price.

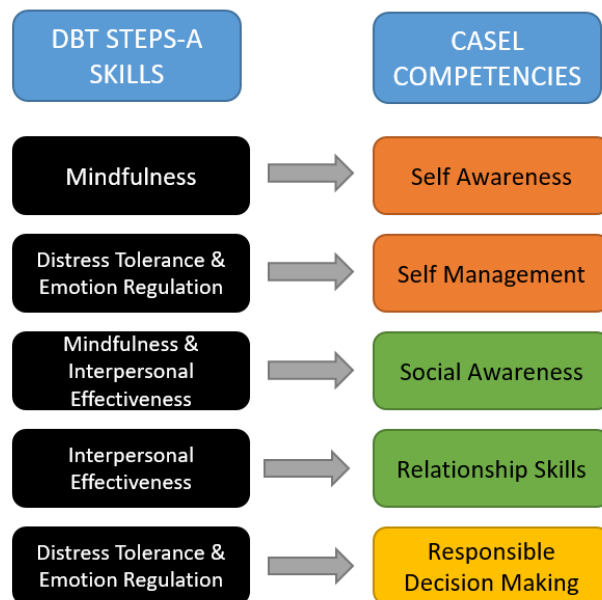
Another advantage of using DBT STEPS-A in a high school setting to reduce stress is that it provides social emotional learning (SEL) programming adolescents, an age group for which SEL programming has traditionally been scarce (Williamson, et al., 2015). In the *2015 CASEL Program Guide*, the publishers only identified five high quality programs applicable to a high school setting, and only one showed promise for improved SEL skills and attitudes (Mazza, et al., 2016). In the *2021 CASEL Program Guide*, thirteen programs garnered CASEL's highest rating as "SElect" programs (CASEL, 2021). DBT STEPS-A has not been submitted for review by CASEL, but it is created specifically for adolescents in mind (Rathus & Miller, 2015; Mazza, et al., 2016; Miller, 2020). Additionally, the training sessions for DBT STEPS-A highlight how the curriculum correlates directly to the core CASEL competencies of self-awareness, self-

management, social awareness, relationship building, and responsible decision making

(Doughty, et al., 2021), as outlined in Figure 6.

Figure 6

How the Skills Taught in DBT STEPS-A Correlate to the CASEL Competencies



Teens are at a unique stage of their biological development. While adolescents are looking to establish an identity, mindfulness and self-awareness can help with this (Yeager, 2017). While they have an increased focus on peer perceptions, interpersonal effectiveness, social awareness and relationship skills are paramount (Yeager, 2017). While they are facing real-world decisions that impact their lives, responsible decision making, distress tolerance, and emotion regulation will play a key role (Williamson, Modecki, and Guerra, 2015; Doughty, et al., 2021). The overlap between the skills taught in DBT STEPS-A and the skills necessary to develop SEL is significant, and therefore by using DBT STEPS-A as a Tier 1 intervention, schools would have a resource to deliver SEL to a wide audience.

Chapter III: Methods

Purpose of the Study

The purpose of this improvement science dissertation was to help students reduce their level of stress related to academic performance. The specific aims were to grow student understanding of DBT stress reduction strategies by the end of a 10-lesson unit as measured by their use and perceptions of usefulness of the strategies, as well as to increase teacher capacity to teach students ways to cope with stressful situations. The study used an improvement science approach to first identify an effective program to reduce high school student stress and then analyzed the perceptions of teachers who implemented the program and students who experienced the program. Through a review of the literature, consultations with similar high schools, and an exploration of several strategies to mitigate the problem of student stress, the program chosen to implement was Dialectical Behavior Therapy Skills Training for Emotional Problem Solving for Adolescents, or DBT STEPS-A, as detailed in Chapter II of this study. The following chapter will explain the methods used to collect data to accomplish the task of analyzing teacher and student perceptions of the DBT STEPS-A lessons. The specific research questions for this study were:

1. To what extent is a partial implementation of the DBT STEPS-A curriculum an effective way of teaching stress reducing strategies to high school students?

Sub question1: How likely is it that high school students use the DBT strategies they learn in the general education setting?

Sub question 2: How likely is it that high school students find DBT strategies useful?

2. To what extent do teachers believe using the DBT STEPS-A curriculum is an effective way of teaching stress reducing strategies to high school students?

Theory of Improvement

As is customary in improvement science, researchers establish primary and secondary drivers to accomplish the aims (Perry, et al., 2020). The root cause analysis identified a number of potential drivers for change, such as challenging the college admission process, reducing parental pressure, or a helping students deemphasize their desire for social acceptance or improve their concept of self-worth. However, in the context of this study looking to implement a short-term focused intervention, it was not feasible to expect a substantive change by focusing on these drivers. Therefore, in this study, the primary drivers of change were teacher practices in the classroom and increasing student knowledge of self-management skills. The secondary driver, which researchers use to further refine the most impactful actions and identify the places where change can occur (Hinnant-Crawford, 2020; Perry, et al, 2020), was the direct instruction of the stress-reducing strategies of mindfulness, distress tolerance, emotion regulation, and interpersonal effectiveness within the classroom. Figure 4 of Chapter II displayed these drivers in the discussion of study's background.

The specific change idea that emerged from these drivers is that that trained teachers would deliver lessons of the DBT STEPS-A curriculum to grade 10 students during their health classes. The primary researcher identified these drivers and change idea because of their feasibility of completion within the scope of this project and the ability of the school-based team to leverage available resources, which are two important criteria in creating change ideas with the most potential impact within an improvement science dissertation in practice (Perry, et al., 2020).

Using Health Classes as the Setting

This change idea was feasible for a number of reasons. Health classes were a natural fit for teaching the skills of DBT STEPS-A, as the manual's authors point out how topics such as good decision making and stress management are already often taught in most high school health classes (Mazza, et al., 2016). In addition, health teachers were familiar with addressing topics related to adolescence, such as peer pressure to use alcohol or drugs, sexually transmitted diseases, and dealing with the outcomes of destructive choices (Fairfield Board of Education, 2009). While the health teachers did not have prior experience with DBT STEPS-A, the certification process familiarized them with content related to teenage wellness in general (Goodwin University, 2018), so the specific skills of DBT STEPS-A will relate well to their experience. In addition, the health department in the Fairfield Public Schools was looking for new content to include in its lessons since the State of Connecticut had recently increased the graduation requirement for health classes (Connecticut Association of Public School Superintendents & Great Schools Partnership, n.d.) which doubled the amount of time students spent in Fairfield's health classes. Using health classes to implement DBT STEPS-A was also a favorable approach because all students are required to take health classes (Fairfield Board of Education Policy Guide, 2018), so adding these skills to the health curriculum did not require the creation of a new course or protocol to expose students to the skills. The researcher and health teachers chose to implement the lessons in Grade 10 because the Grade 11 curriculum had already expanded its content with other topics and Grade 9 students will not have had enough of a high school experience to draw upon for class discussion about how high school students experience stress. The Grade 12 curriculum was already established and these students fell under older graduation requirements with less time devoted to health classes, so that grade was

not feasible for implementation. Finally, the research team considered Grade 10 as an ideal point in the high school progression since students would learn stress-reducing strategies prior to their junior and senior years when course rigor increases, expectations rise, and stress related to post-secondary planning intensifies.

DBT STEPS-A Resources

Another reason the use of DBT STEPS-A lessons in health classes had potential as an impactful change idea was because of the ability to access resources. In the 2018-19 school year, Fairfield Public Schools hired a company to train all of its middle and high school social workers and school psychologists in Comprehensive School-Based DBT (CSB-DBT), which is a more intense level of intervention (Tier 3) than STEPS-A, and it targets students who generally have difficulty managing their emotions in a school setting. This prior training created a cadre of mental health professionals within the school who are using the strategies with students in intensive settings who can be used as resources for the health teachers implementing the less intensive version of the curriculum (Tier 1) from DBT STEPS-A. In addition, that training established a relationship with an organization devoted to bringing different versions of DBT to schools throughout southwestern Connecticut and regions of southern New York State. As part of its efforts to increase more social emotional learning for students, Fairfield Public Schools committed to hiring the same company to train all middle and high school health teachers in DBT STEPS-A so they could begin to pilot lessons and consider how it may contribute to a future curriculum revision. This decision coincided with the primary researcher's conclusion about the overall effectiveness of DBT STEPS-A and its potential as an intervention, as presented in the review of scholarly and professional knowledge in Chapter II. Thus, the primary researcher and the school's health teachers underwent four days of training in October of

2021 with the plan to implement lessons during the last six weeks of the fall semester (late November to mid-January) as part of this improvement science dissertation in practice. Part of the training also included acquisition of a DBT STEPS-A manual of lessons (Mazza, et al., 2016) and three future consultation meetings with one of the facilitators of the training. These consultations took place at about four-week intervals between October and December and included advice on how to consolidate lessons to meet the health department's timeline since the manual contains 30 lessons but the timeline would allow for 10 lessons. The consultation also included a reminder of key learning points of each of the lessons to ensure they were included in the lessons designed by the primary researcher and team of teachers.

The Plan-Do-Study-Act (PDSA) Cycle

With the change idea of lessons from the DBT STEPS-A curriculum being taught to grade 10 students during their health classes now selected, the improvement science process considers an inquiry approach to assess the impact of a change, through the Plan-Do-Study-Act (PDSA) cycle (Bryk, et al., 2015; Hinnant-Crawford, 2020). The PDSA cycle is an iterative process, so each round of the cycle will lead to improvements in the change idea. The length of this project allowed for two cycles, once at the midway point in mid-December and once at the end point in mid-January. The following is a description of each part of the PDSA cycle as it relates to this project.

Plan. The “Plan” stage is where the researcher designed the plan of carrying out the change, including deciding who would be involved, what will be done, and when it will happen (Bryk, et al., 2015; Perry, et al., 2020). The team identified for this project consisted of four health teachers, the district health department coordinator, a trained consultant, and the primary

researcher. The primary researcher provided the vision and the overall purpose of the project, namely to reduce student stress, and the trained consultant and the manual provided the knowledge and skills necessary for the health teachers to provide instruction on the identified strategies. Accessing the voice of the teachers was critical in this stage, as their lived experiences and wisdom around the size of the lessons, the capacity of students to handle concepts, and how best to assess students proved extremely helpful. Through the training sessions and planning meetings, all the members of the team became conversant on the language and terms surrounding DBT STEPS-A and the resources available to design and implement the lessons. The team determined the timeline for implementing the lessons and decided which of the 30 lessons from manual to use to create lessons for the grade 10 health classes.

Do. The “Do” phase is about carrying out the change and collecting data (Bryk, et al., 2015). With input from the teachers, the primary researcher designed 10 lessons, and the teachers implemented the lessons. Over the course of this stage, the trainer/consultant met with the team three times to help plan for the next series of lessons. This stage included an important feedback cycle as teachers monitored student reactions to the lessons and provided that feedback to the primary researcher in the form of a focus group after five lessons were implemented and then again at the end of all the lessons. Data was also collected from the students in the form of surveys before the lessons began and again after the lessons were completed.

Study. The “Study” phase included the researcher analyzing the data, reflecting on what happened in the Do cycle, and determining the changes necessary to maximize improvement (Bryk, et al., 2015; Hinnant-Crawford, 2020). At the midway point when the researcher met with the teachers, their perception was that the lessons were not resonating with students as evidenced by the lack of student participation in discussions. After reflecting on the possible

reasons, the team noticed that the early lessons contained a lot of new information and terminology related to understanding the foundational concepts of DBT, which did not capture student attention. This helped inform what the actions in the next stage of the cycle (“Act”). After the final lesson and the second iteration of the Plan and Do phases, a new Study phase looked at the data from the student surveys regarding their perception of the usefulness of DBT strategies. The team also considered student suggestions on how to further refine the lessons for future implementation.

Act. The “Act” stage consisted of deciding how to use the information gained from the study phase to ensure future success (Bryk, et al, 2015; Hinnant-Crawford, 2020). After gathering data at the midpoint, the team decided to make sure that future lessons asked students to make personal connections to the concepts and be more interactive, shifting toward more activities and less lecture. The goal was to increase engagement so that the students would find the lessons applicable to their own lives as well as have more fun while participating. The data gathered at the end of the lessons was informative toward knowing that the change made an improvement in helping students be more knowledgeable about stress reducing strategies. It also set up future PDSA cycles that the health department can complete as they implement another round of lessons to 10th graders in second semester courses.

Intervention

The intervention was 10 lessons derived from the manual titled *DBT Skills in Schools: Skills Training for Emotional Problem Solving for Adolescents (DBT STEPS-A)* by James J. Mazza, Elizabeth T. Dexter-Mazza, Alec L. Miller, Jill H. Rathus, and Heather E. Murphy. The intervention team included the primary researcher and four health teachers who all acquired the manual as part of four days of training sessions that took place in early October, 2021. The

manual states that educational institutions have flexibility in choosing how to implement DBT STEPS-A, especially when using it within the general classroom setting as a Tier I intervention (Mazza, et al., 2016). Schools have the option of teaching the lessons as a mandatory course, an elective for students to choose, or in conjunction with another established course, such as health. Fairfield Public Schools and the health department felt this third option was the best scenario since it would eventually bring the skills taught in the curriculum to all students. The manual's authors designed the lessons to take place in 50 minutes but also state that teams can adjust the content for different period lengths (Mazza, et al., 2016). This was the case at Fairfield Ludlowe since health meets for half a block period, or 41 minutes. The authors suggest spacing out lessons to once or twice a week and not teaching the lessons on back-to-back days to allow for processing and practice of the concepts through homework assignments, which helps with the generalization of the skills to different settings (Mazza, et al., 2016). Fairfield Ludlowe uses an AB Block schedule where classes meet every other day, so any one individual section would meet either two times or three times during a five-day week. With a holiday break in the window of November 29-January 14, there were rarely five-day weeks during the intervention.

The suggested lesson structure includes a 5 minute mindfulness practice to start each class, a 7-10 minute review of the homework assignment, 25-35 minutes devoted to teaching a new skill, and 3-5 minutes devoted to a lesson summary and homework explanation (Mazza et al., 2016). To compensate for the shorter period length, the Fairfield Ludlowe intervention team eliminated the homework review and replaced it with a 2-4 minute review and discussion of the previous lesson. This also made sense since health classes at Fairfield Ludlowe traditionally do not assign single lesson-specific homework assignments but instead assign research projects to be worked on at home related to the content of the unit.

As discussed in Chapter II, DBT STEPS-A consists of four main skill sets to help students make practical decisions, be more effective in their lives, and reduce stress. These skills include, mindfulness, distress tolerance, emotion regulation, and interpersonal effectiveness (Mazza, et al, 2016). Figure 5 highlighted how each of the core skills targets a set of negative behaviors to replace them with positive behaviors. The authors divided the curriculum into four modules based on the four core skill areas and each module contains six to eight lessons that teach strategies to switch from negative behaviors to positive behaviors. Given the timeline of this project, the intervention team needed to pare the manual's 30 lessons down, and chose the ones they felt were the most relevant to 10th grade students. In some cases, the team combined concepts to expose students to more content. Table 6 highlights the lessons the primary researcher and health teachers planned to implement and the corresponding lessons from the DBT STEPS-A manual.

Table 6

Lessons Planned for the Intervention and Corresponding Lessons from the Manual

Module	FLHS Intervention Team's Lessons & Concepts	Lessons from Manual
Orientation	1- Orientation and Dialectics	1, 2
Mindfulness	2- Wise Mind	3
	3- What Skills and How Skills	4,5
Distress Tolerance	4- ACCEPTS, Self Soothe, IMPROVE	6,7
	5- TIP and Radical Acceptance	8,10
Emotion Regulation	6- Describing emotions, checking facts, & opposite action	16,17

	7- ABC PLEASE	19, 20
Interpersonal Effectiveness	8- Goal Setting, DEAR MAN	25, 26
	9- GIVE and FAST skills	27, 28
Conclusion	10 – Review of skills; Final Assessment	

Note. DBT STEPS-A uses a number of acronyms as mnemonic devices, indicated in the table with all capital letters. To see the acronyms spelled out, see Appendix B.

The intervention team's 10 designed lessons would deliver 17 lessons from the manual during the intervention period of November 29 through January 14, which included 13 meeting times for each class. While the original plan was to implement one lesson per class, the team planned for three extra sessions in case some lessons needed to extend into an additional day, a staff member was absent, or for weather related cancellations of school. This allotment proved wise as the teachers used all 13 days to implement the lessons.

The lesson design process consisted of the primary researcher reviewing training notes, the manual, and online resources available to choose the specific content of the lesson, and then he created a series of resources for the teachers. The resources included a deck of Google slides the teachers could use to present the content, a lesson plan that described how to use each slide or activity instructions within the lesson, and any handouts that were necessary to carry out the lesson. The lessons were designed gradually over the course of the intervention period to accommodate for any feedback the teachers could provide the primary researcher and so that the team could meet with the trainer/consultant prior to the start of each new module. The primary researcher would place each of these elements in a Google Classroom so each of the health

teachers could access and make adjustments they thought would be necessary based on their estimation of how long the lesson would take or their interpretation on how best to present the material to their students. While the teachers had freedom to make these small adjustments, the team agreed to stay true to the sequence of lessons, be sure to include all of the main topic elements of each lesson and conduct the same activities and assessments across all nine sections. This agreement increased the fidelity of the intervention delivery.

Research Design

Within the context of improvement science, this study adopted a practical action research approach with a mixed-methods convergent design. The rationale for using practical action research was that it allows a researcher to address a narrow-focused problem in a local setting and work collaboratively with a team of people impacted by the intervention. At Fairfield Ludlowe High School, the primary researcher wanted to work with teachers to focus on the specific problem of student stress. Action research also requires professional development, and the school staff had already expressed there was a need to engage in deeper learning about how best to help students. Finally, action research results in real solutions that become actionable for schools to use with students (Creswell & Plano Clark, 2017; Plano Clark & Creswell, 2015), which meant the school team could see results in a short amount of time as a result of their efforts. With the conditions of stress being so prevalent among Fairfield Ludlowe students, and the staff desiring a way to tackle the issue, stress reduction management was determined to be an important and feasible topic for action research. This project utilized a paradigm of pragmatism, since it focused on looking for what worked in a classroom as opposed to testing or developing a theory (Hinnant-Crawford, 2020).

The rationale for using a mixed-methods convergent design was that it allowed for obtaining different types of data on the same topic at the same time. The primary researcher collected quantitative data through single choice student survey questions, comparing pre- and post-unit survey results to look for trends in how frequently students used the strategies. Students responded to items that asked about their willingness to try the strategies and their perception of the usefulness of the strategies. The primary researcher collected qualitative data through teacher focus groups and open-ended survey questions to students about the effectiveness of the lessons. The narrow intervention window of 13 class sessions over 5-6 weeks necessitated collecting different types of data at the same time. Combining and comparing the results of the qualitative and quantitative results allowed the researcher to obtain a more complete understanding of the problem. The mixed methods design also allowed the researcher to combine the perspectives of the teachers who implemented the intervention with feedback from the students who received the intervention.

Setting

The setting of the change idea of using DBT STEPS-A was grade 10 health classrooms of Fairfield Ludlowe High School in the Fairfield Public Schools during the fall semester of the 2021-2022 school year. Students are required to take health classes in all four years of high school in Fairfield. The classes met every other day in an AB block schedule (85 minute periods), but health classes only meet for 41 minutes. Starting with the Class of 2023, new graduation requirements mandated students enroll in 1.0 credits of health, and each year of health provides students with .25 credits. The students involved in this project were in grade 10, which is the graduating class of 2024. The school enrolls all grade 10 students in a course called Health 10, and nine sections were scheduled in the fall semester of 2021-2022 and eleven sections were

scheduled for the spring semester. The average size of Health 10 classes scheduled in the fall semester was 19.1 students. Students received a letter grade (A-F) for the course but grades from Health classes do not contribute towards the calculation of a students' overall GPA. Prior to the unit on DBT STEPS-A, the Health 10 curriculum covered physiological effects of use/abuse of alcohol and drugs with special emphasis on discussing the ramifications of drinking and driving.

Population and Sampling

The target population of this study was high schools students and the sample population was students in their sophomore year enrolled in health classes while aiming to understand the effectiveness of the DBT STEPS-A curriculum in helping students manage stress. To measure this, the sampling plan focused on gathering the perceptions of the students in the class who received the intervention as well as the perception of the adults providing the instruction.

The original sample of students included 172 students aged 14-16 years old; ninety-four were male, 71 were female, and two identified as non-binary. The students were enrolled in nine sections of Health 10 offered at Fairfield Ludlowe High School during the fall semester of 2021-2022. The school groups the sections heterogeneously by ability and places no restrictions on who could enroll in the class other than grade level. The student sample for the qualitative data was purposeful and homogenous, as the primary researcher reviewed the survey responses of all students enrolled in the course. The researcher used non-probabilistic, total population sampling for the quantitative data since the whole population from grade 10 health classes in the fall semester completed the surveys. The sample is also opportunistic since the researcher's decision to use DBT STEPS-A coincided with the health department's decision to adopt some of its principles. The primary researcher did not use a control group since the teachers and health department wanted to ensure that all students in the grade received the same curriculum. Parents

received emails informing them about the study and that the privacy protections in place. The letters stated that participating in the study would have no impact on the student's grade and that the student or the parent could decide to opt out of participation. No student or parent decided to opt out of the study.

The teacher sample was purposeful and homogenous, as each of the four participants was a Health teacher at Fairfield Ludlowe High School. Three teachers are full time members of the faculty of FLHS and one is full time but splits her teaching assignment between FLHS and another school. All four teachers have least two sections of Health 10 during the fall semester as part of their teaching assignment. All of the participants were female and their ages ranged from 26-50. See Table 7 for a full breakdown of the teacher participants in the study.

Table 7

Health Teacher Participants

Teacher	Status in the school	Teaching Experience (Yrs)	Gender	Age	# of Sections of Health 10
Teacher 1	Full-time	18	Female	48	2
Teacher 2	Full-time	15	Female	44	2
Teacher 3	Full-time	7	Female	50	3
Teacher 4	Part-time	5	Female	26	2

The primary researcher informed the four teachers they were under no obligation to participate in the intervention or the evaluation of the intervention and that declining to participate would not impact their role or employment in anyway. Although the primary researcher is the Head Principal of the school, the school's administrative structure includes three House Principals who are the primary evaluators of the staff and the Head Principal does

not directly evaluate the participants in the study. The primary researcher/principal provided letters to the teachers explicitly stating that their decision to participate would not affect their employment status or how they will be supervised in any way.

Methods for Evaluation

Quantitative Data Collection

The researcher collected quantitative data via a survey students took prior to the start of their lessons and a post-unit survey students took as part of their final assessment when they completed all the DBT lessons. Students took the pre-unit survey during the first class in each of the sections. The questions of the survey asked students how frequently they had applied a stress-coping skill that aligns with DBT skills in the last month of their lives. Appendix D lists the questions on the survey, and while the DBT skill being measured is included in parentheses after each item, but the skill was not revealed when presented to the students. Responses were on a Likert-type scale from 0-3, where 0 = Never, 1 = Rarely (once or twice), 2=Sometimes (more than 2x), and 3=Regularly. The primary researcher wrote the survey questions and Likert-type responses but he adapted the structure and content of the survey from the *Dialectical Behavior Therapy Ways of Coping Checklist* (DBT-WCCL) (Neacsiu, et al., 2010). The DBT-WCCL scale uses the same response scale as the survey created for this study (0=Never, 1=Rarely, 2=Sometimes, and 3=Regularly) and similarly instructs participants to think back on the last one month of their lives when answering (Neacsiu, et al, 2010). However, since the primary use of the DBT-WCCL is in clinical settings and it includes 59 items to which participants respond, the primary researcher needed to rewrite the items on the FLHS survey to be relevant to all students in a general education classroom participating in a group intervention. Thus, the measure used in this study contained fewer items, and matched the specific lessons that

the teachers delivered in the unit taught in health classes. Previous research validated the items of the DBT-WCCL as psychometrically sound and established both content and criterion validity (Dadd, 2015).

Additional quantitative data came from responses of post-unit survey items, as seen in items 1-12 in Appendix E. This portion of the survey asked student to comment on whether they think schools should help students learn strategies (item #1), and whether they had been taught stress reducing strategies in the past (item #2). These questions helped the primary researcher understand the context in which students learned the skills. Additional questions correlated directly to this study, including asking whether students thought the skills were helpful (items #3-6), whether students would use the skills they have learned in the future (items #7-9), and if they have used the skills since the unit began (items #10-12).

The independent variable for the quantitative data was the explicit teaching of strategies of the DBT STEPS-A curriculum. The dependent variable was the student use of the strategies and their perception of the usefulness of the strategies they have learned. The primary researcher measured the dependent variable through the questions on the post-unit survey described above.

Qualitative Data Collection

Participants in the qualitative data collection included students and the teachers. The qualitative data collected from students was comprised of their responses to open ended questions on the post-unit survey they took as part of their final assessment once all the lessons were complete (See questions 13-16 of Appendix E). The questions ask students to reflect and write about a skill they used and explain why it was helpful. If they had not tried the skills, the question asks them to explain why. Other questions asked the students to discuss the topic they

felt was the most useful, the topic they felt was confusing, and what they would suggest to teachers to make the unit better.

The teacher data came in the form of responses to two focus group interviews, one at the midpoint of the lesson implementation and one at the end. The primary researcher conducted both interviews with the four health teachers using a semi-structured format with the same seven base questions for both rounds with optional follow-up questions depending on the nature of the responses (See Appendix C). The researcher used semi-structured interviews to provide flexibility to ask clarifying questions or to follow up on topics the teachers bring up outside the scope of the questions (Metzler, 2017). The first focus group interview took place in mid-December after half lessons have been implemented, and it served as a process evaluation since it provided feedback on how well the DBT STEPS-A lessons were working up to that point (Perry, et al, 2020). The second focus group took place at the end of the unit after students had taken their final assessment, and it provided data to answer the second research question, “To what extent do teachers believe using the DBT STEPS-A curriculum is an effective way of teaching stress reducing strategies to high school students?” One could consider this a “lagging outcome evaluation” since it provided useful feedback but it may be too soon to determine whether the final outcome is an improvement to the problem of high school student stress (Perry, et al, 2020).

Focus groups were preferable form of data collection in this project as group feedback from teachers is a common practice in the school setting. Teachers will have a greater comfort level sharing ideas in a group where participants can react to each other’s comments or remind each other of anecdotes from their experiences (Meltzer, 2017). Additionally, since the intervention window was narrow, the focus group format was preferred for efficiency to permit

for quicker adjustment to the intervention strategy based on feedback. This efficiency was also necessary in order to complete two iterations of Plan-Do-Study-Act format of improvement science

Data Analysis Plan

The researcher collected the quantitative data from both the pre-unit survey and post-unit survey in a Google Form and then transferred the data to an Excel spreadsheet for organization. The data was loaded in SPSS to be analyzed. The items that asked students whether they have used the skills in the past month (A-J, see Appendix D) appear on both the pre-unit survey and the post-unit survey, allowing the researcher to compare student responses from before the intervention so to after their exposure to the DBT skills. A paired samples *t*-test was used to evaluate the impact of the curriculum on student usage of each of separate DBT skills taught. For the items on the post-unit survey that ask students about the usefulness of the skills, the researcher used descriptive statistics to measure outcomes and frequency distribution tables display the data results in graphic form.

When establishing external validity of the quantitative data, it is important to remember the scope of this dissertation in practice and action research project was to improve conditions of student stress within the confines of Fairfield Ludlowe High School. This means that generalizability was not a goal of the project. To enhance measurement validity, the researcher asked the teachers and the outside consultant who was part of the research team to review the survey items and comment on whether they felt the content of the instrument dealt directly with what it was trying to measure. Teachers are experts in assessing adolescents and the consultant is an expert in DBT STEPS-A, so their knowledge and affirmation that the survey matched the content of the intended measure was helpful to establish content validity.

For the qualitative data, the researcher recorded the final teacher focus group responses on a Google Meet and transcribed the conversation via the Scribbl add-on application. The primary researcher then edited the transcript for accuracy. The primary researcher conducted open coding of the transcript at the first level of analysis, recording a wide range of terms based on the teacher's responses. The axial coding phase prompted the researcher to draw connections between the original terms and place them into broader categories. The final stage, or selective coding stage, established the themes described in the presentation of findings. The researcher shared the transcript with a colleague in the same doctoral program who works at another high school but has no connection with this study or the teachers in focus group. The colleague independently coded the transcript to compare with the codes chosen by the primary researcher in order to demonstrate inter-coder reliability. While the first focus group session was not coded, the researcher compared the answers from the teachers from both interviews to see if there was consistency of answers between the sessions or if a change to the program occurred due to feedback provided from the first session. Feedback from the first focus group resulted in an important change to the intervention, which is presented in the discussion section.

The open-ended items on student survey were an additional source of qualitative data, and students typed their answers directly into a Google form as part of their final assessment. The primary researcher extracted the responses from the Form and entered them into Excel for analysis. The researcher organized the data so all responses to the same question appear together, allowing him to code the responses and establish a set of broad themes summarizing the main points of the student input.

In using a convergent mixed-methods design, the researcher collected both the quantitative and qualitative data at the same time, and integration of these results brought a more

comprehensive understanding of the results. The designed also allowed the researcher to compare the teacher perceptions shared during the focus groups with the student responses from the surveys. This process also served to see if the student responses corroborated the comments made by the teachers regarding whether the students were responding positively and the comments made about whether DBT STEPS-A is a potentially effective means of helping students cope with stress.

The use of different data sets also adds to the trustworthiness and validity of the results. This method is often referred to as triangulation (Meltzer, 2017), as two different approaches are analyzed independently but then brought together to a common point or conclusion. Creswell and Plano-Clark (2018) discuss how terminology has evolved within mixed-methods approaches, and the intent of a research design and what a researcher does with data sources has become incorporated into the design name. Therefore, the use of triangulation as a way to enhance validity is already implied by calling the study a “convergent design.”

Chapter IV: Findings

The research questions guiding this study are:

1. To what extent is a partial implementation of the DBT STEPS-A curriculum an effective way of teaching stress reducing strategies to high school students?

Sub question 1: How likely is it that high school students use the DBT strategies they learn in the general education setting?

Sub question 2: How likely is it that high school students find DBT strategies useful?

2. To what extent do teachers believe using the DBT STEPS-A curriculum is an effective way of teaching stress reducing strategies to high school students?

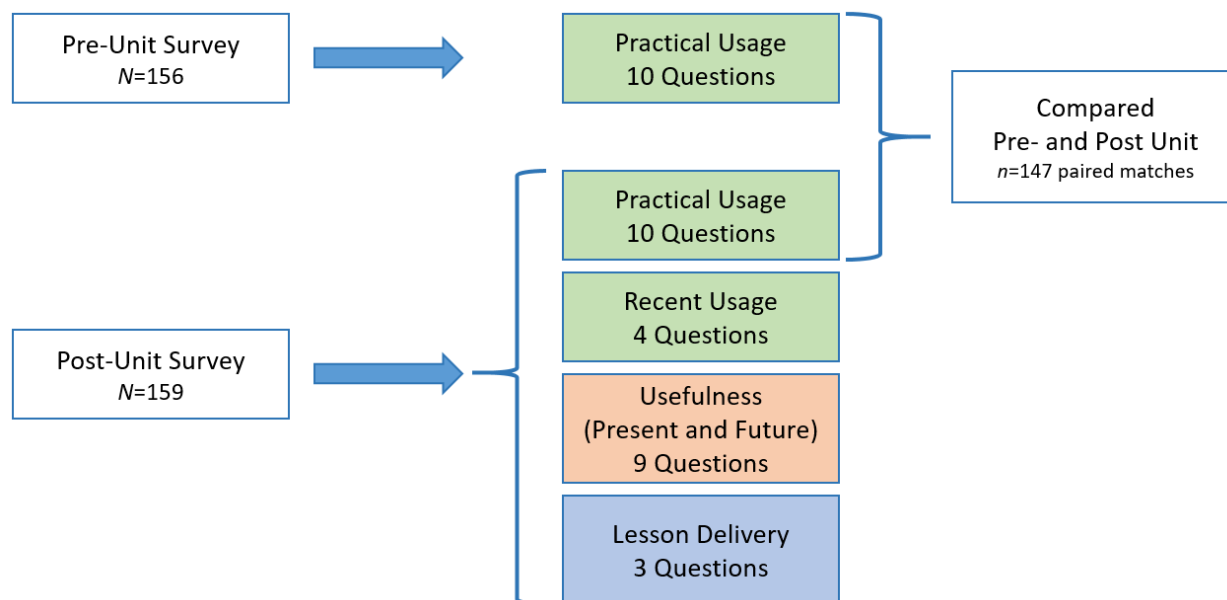
This study organizes the data analysis to evaluate the effectiveness of the DBT STEPS-A into two main content areas: usage and usefulness. *Usage* is defined here as whether and how frequently students applied DBT skills in their lives. The pre-unit and post-unit surveys contained 10 parallel items that asked students whether they have ever utilized a specific skill to replace a negative behavior or make a change for a more positive outcome (See Appendix D). In the analysis, the results of these items are referred to as “practical usage” since they ask students to consider the use of the skills in the context of specific situations. The study also evaluated usage from the results of three questions on the post-unit survey that explicitly asked students if they had integrated DBT skills outside of class since the unit began (See Appendix E). The study uses the term “recent usage” in the analysis of these results. The post-unit survey also contained an open-ended question informing recent usage when asking students to provide a description of how they used any of the skills.

The second area of focus was *usefulness*, which evaluated if the students found the skills helpful and might potentially utilize these strategies in the future. Four post-unit survey questions addressed whether students found the skills helpful and three questions asked if they would use the skills in the future. Two open-ended questions determined which strategies students perceived to be the most useful.

Rounding out the post-unit survey, a series of questions related to the process of implementing the lessons. Since it was the first time staff taught the DBT STEPS-A curriculum, it was important to gather student impressions of the lessons, materials, and assignments. Questions asked students if they felt stress reduction should be taught in school and an open-ended question asked for suggestions for improving the unit. See Figure 7 for a depiction of the structure of each of the surveys use the content areas described above.

Figure 7

Student Survey Structure, Content, and Participants



In addition to student surveys, the focus groups with teachers provided additional data around their perceptions of student usage, usefulness and what changes they feel are necessary to the lessons and unit. This chapter presents the results of both quantitative and qualitative data from student surveys and teacher focus groups.

Sample

At the start of the first semester, the enrollment Grade 10 students in the Health 10 class was 172. Due to long-term absences, a withdrawal, and schedule changes, the enrollment was 168 at the start of the intervention. As noted in Figure 7, 156 took part of the 10-question pre-unit survey and 159 took part in the 26-question post-unit survey. Table 8 depicts the demographic details of those who took the post-unit survey.

Table 8

Demographic Details of the Sample (Post-Unit Intervention)

	<i>n</i>	Percent
Gender		
Female	68	43
Male	89	56
Non-binary	2	1
Race/Ethnicity		
Hispanic/Latino	13	8
Asian	10	6
African- American/Black	5	3
White	120	76
Two or more races	11	7

Note. *N*=159

Data Collection

The researcher asked the 10 practical usage questions appearing on the pre-unit survey in the Health 10 classes on a Google Form. The survey took place on the first day of the DBT unit

in the last week of November, 2021. The researcher provided students with a brief overview of the purpose of the DBT unit explaining that it was an approach to stress-reduction that helped them analyze their own emotions and behavior. Students were also told that their input was valuable to the health teachers to determine the viability of teaching these skills as well as the techniques used to teach these skills to future classes. The researcher transferred the results of the survey to a spreadsheet for later analysis and comparison to the post-unit survey. Student names became numbers to de-identify the responses. The researcher also implemented the post-unit survey via Google Form in conjunction with the final assessment given by the health teachers. The assessment contained questions to determine student mastery of the content and questions crafted to gather information about use of the skills, student perception of usefulness, and the process of delivering the lessons. The post-unit survey responses were similarly de-identified, placed in a spreadsheet, and analyzed.

Data and Analysis

Usage – Student views

Practical Usage. The results provide insight into two forms usage – practical and recent. Practical usage refers to whether students have used the skills in real circumstances, and recent usage refers to whether the students have used the skills since learning about them from the intervention. The study measured practical usage by the 10 parallel questions that appeared on both the pre-unit and post-unit surveys asking students to share how frequently they used specific DBT STEPS-A skills when faced with certain situations. Three questions related to mindfulness, two questions related to distress tolerance, three questions related to emotion regulation, and two questions related to interpersonal effectiveness. Teachers adjusted lessons during the process of implementing the intervention and removed the module on interpersonal effectiveness due to

time limitations and the need for reinforcing difficult foundational concepts. However, the survey questions related to this skill were kept on the post-unit survey for consistency and to help assess how student behaviors may have changed even without explicit instruction on this topic.

For analysis purposes, new variables were formed to group DBT skills and provide comparison from pre-unit survey to the post-unit survey. As noted in Table 9, paired-samples *t*-tests were conducted to evaluate the impact of the curriculum on student usage of the different DBT skills taught throughout the intervention. There was a statistically significant increase in scores for mindfulness $t(146) = -5.69, p < .001$; distress tolerance $t(146) = -3.42, p = .001$; emotion regulation $t(146) = -8.22, p < .001$; and interpersonal effectiveness $t(146) = -.24, p = .02$.

Table 9

Paired t-test for DBT STEPS-A Skills in Pre and Post-Unit Surveys

DBT STEPS-A Skill	M	SD	$t(146)$	p
Mindfulness				
Pre-unit	5.18	1.67	-5.69	<.001
Post-unit	6.12	1.53		
Distress Tolerance				
Pre-unit	3.45	1.38	-3.42	.001
Post-unit	3.93	1.33		
Emotion Regulation				
Pre-unit	4.70	2.06	-8.22	<.001
Post-unit	8.18	1.60		
Interpersonal Effectiveness				
Pre-unit	3.63	1.30	-.240	.02
Post-unit	3.93	1.29		

In the case of all four skills, the mean scores showed statistically significant differences between pre and posttest, with emotion regulation showing the largest increase, followed by distress tolerance, then mindfulness and then interpersonal effectiveness. Additionally, the data indicated a greater frequency of use after teachers applied the intervention.

Recent Usage Due to Intervention. Students indicated recent usage of DBT skills as indicated in both quantitative and qualitative measures. Quantitative results of the post-unit survey show the majority of students reported that they had used the DBT skills outside of class since the unit began. As seen in Table 10, the skill that was most often used was distress tolerance with 77% of students (n=122) followed by emotion regulation with 69% (n=109) and mindfulness at 62% (n=98).

Table 10

Percent of Students Indicating Whether They Have Tried Various DBT STEPS-A Skills Outside of Class since the Start of the Health Unit (Post-unit Survey)

Question – Since we started this unit, have you used the skill of...?	Yes		No	
	<i>n</i>	%	<i>n</i>	%
Mindfulness	98	62	61	38
Distress Tolerance	122	77	37	23
Emotion Regulation	109	69	50	31

Note. N=159.

For all three measured skills, a large majority of students indicated that they had integrated the skills into their personal lives or in other parts of their school day.

The qualitative data of recent usage of DBT STEPS-A skills came from open-ended question on the final assessment with the following prompt, “If you answered Yes to any of the 3

questions above (referencing the questions about using the skills since the start of the unit), please write about one skill you used and how you used it. Why was it helpful? If you answered No to all of the questions above, please explain why you don't think you have used the skills” (Appendix E). Of the 159 students who took the post-unit survey, only nine indicated they did not use the skills, with the main reasons being that they forgot to use them when faced with a problem or that they have been taught other skills in the past and prefer to use those skills. For the 150 students who indicated they used the skills, Table 11 highlights the skills they identified in their responses.

Table 11

Student Response to Open Ended Prompt to Describe Recent Use of DBT STEPS-A Skills

Skill Set Mentioned by Students	Number of Students Mentioning the Skill (<i>n</i>)	% of All Answers*
Mindfulness	43	29
Distress Tolerance	71	47
Emotion Regulation	49	33

Note. *N*=150; * Total percentage adds up to greater than 100% because some students mentioned multiple skills.

As seen in Table 11, students mention distress tolerance the most, which is consistent with the findings displayed in Table 10 where students also expressed using distress tolerance the most.

Why Students Used the Skills. Three main themes emerge from the student responses about why they used the skills. First, students coped with stressful moments by distracting themselves through seeking an escape or taking a break. Second, they coped by making a purposeful change to their state of mind, like increasing focus or seeking a sense of calm.

Finally, students used the skills to cultivate more positivity, such as shifting their attitude from negative to positive thinking or scheduling positive events in their future. Figure 8 highlights initial coding terms, their frequency, and the three main themes that emerge from the codes.

Figure 8

Initial Codes and Emerging Themes about Usage of Skills

Initial Code	# of mentions	Theme	Combined <i>n</i>	Percent of Students Mentioning Theme	Predominant skills identified
Escape (from work/task)	30	Distraction	44	29.3	Distress tolerance
Break (to avoid stress)	14				
Focus (trying to increase)	26	Purposeful mindset change	44	29.3	Distress tolerance, Mindfulness
Calm (getting to a state of)	18				
Move to Positive Attitude	22	Cultivating positivity	38	25.3	Emotion regulation
Scheduling Positive (events)	11				
Future Happiness	5				

Note. *N*=150

Coping Through Distraction. Figure 8 shows that there were 44 mentions of some form of escape or taking a break from stressful situations, which amounts to 29% ($n=44$) of the sample. Within this subset, the majority of students (36 of the 44) specifically identified distress tolerance as the skill they were using. Distress tolerance is about managing stressful emotional situations without engaging in behavior that will make the situation worse (Tull, 2020). DBT offers a number of strategies that help one to distract the mind through physical breaks, visualization, or sensory input (Mazza et al., 2016). One student writes,

I found out about the midterms and I was very stressed. I tried some of the methods such as paced breathing and using one of my senses such as hearing to listen to music. This helped me escape for a second so I could help the intrusive thoughts for a little bit. It was helpful because I was less stressed about it later.

The two skills mentioned by the student are “TIP” and “Self-Soothe,” which are two of the distress tolerance skills taught in lessons 4 and 5 of the intervention (See Table 6). Another student described a visualization strategy:

I used ‘imagery’ from IMPROVE last night when I was stressed and studying. I imagined myself in RI, the salty breeze, bonfires on the shore, tan, happy with my cousins...Having no worries about school and being able to take a step back. It is helpful because it allowed me to focus on the simple things, being grateful what I have and acknowledging the stress is temporary.

Both of these student quotes show how they valued the opportunity to deescalate their stress levels through learned strategies. Other students using this theme mentioned distraction tactics like playing with pets, video games, coloring, or taking walks.

Coping Through a Purposeful Mindset Change. A number of students wrote about making a conscious change to their mindset to gain focus or get to a calmer state of mind. As shown in Figure 8, 29% (n=44) of all comments related to these topics. Distress tolerance skills continued to play a prominent role, as half of this subgroup’s comments (22 of 44) identified using these skills. However, instead of using distress tolerance as a means of escape, they wrote about making an active attempt to alter their current condition, as exemplified by this student’s comments:

When I am upset I try to change my mindset, I do something that will calm me down or make me more relaxed than before. An example of this is like working out, listening to music, or taking a shower.

The other half of the students in this subgroup (22 of 44) identified skills related to mindfulness. Mindfulness is the practice of being actively aware of one's present surroundings and fully focusing on the present moment in a non-judgmental way (Scott, 2020b). Here a student demonstrates how purposely choosing mindfulness helped during a stressful moment:

I have used mindfulness when studying for exams...When I felt myself start to spiral and get stressed out, I tried to be mindful and focus on doing what I can to ensure my success instead of stressing about a possibility of not doing well.

Another student recalls being unproductive doing schoolwork and using mindfulness to cope:

I looked up from my computer, took some deep breaths, and slowly walked myself through everything that I had to do to finish the assignments, acknowledging my feelings of stress, but not letting myself dwell on them. I felt like I had more control over the assignments, and I was less stressed. After that, I felt that I was more focused, and it helped me to be more productive.

In both examples, the students acknowledged that stress was impeding their progress, but their ability to be mindful played an important role in being able to take action to refocus and move forward.

Cultivating Positivity. Another theme to emerge from about 25% (n=38) of students was making a purposeful shift from negativity to a more positive place. The dominant skill

referenced in this subgroup was emotion regulation (35 of 38 mentions). Emotion regulation skills help one to reduce unpleasant emotions and reduce one's vulnerability to strong negative reactions by understanding the impact of emotions and increasing positive experiences (Mazza, et al., 2016). One student shares about looking for positives after experiencing a number of painful events:

I have used the skill of emotion regulation since we started this unit. For the past few weeks, I have been sick, lost a friend, and lost a coach. Instead of isolating myself or locking myself in my room, I thought back to our lessons and realized that being with my friends, being at practice, and doing the things I love can help distract me and make me feel better.

Students also wrote about how imagining and planning for positive experiences can reduce the stress they feel from school and make them more productive. Consider these two comments:

Something positive coming up in my life is my vacation to Florida next month, so I decided to focus on planning that to distract myself from the stress of midterms... I put myself in a happy place rather than a stressed one. I was happy about the future instead of nervous.

I realized that when I schedule time off of schoolwork and to have some fun, I actually find myself being much more productive when it is time to do work. It also makes work easier to do because I am a lot less stressed.

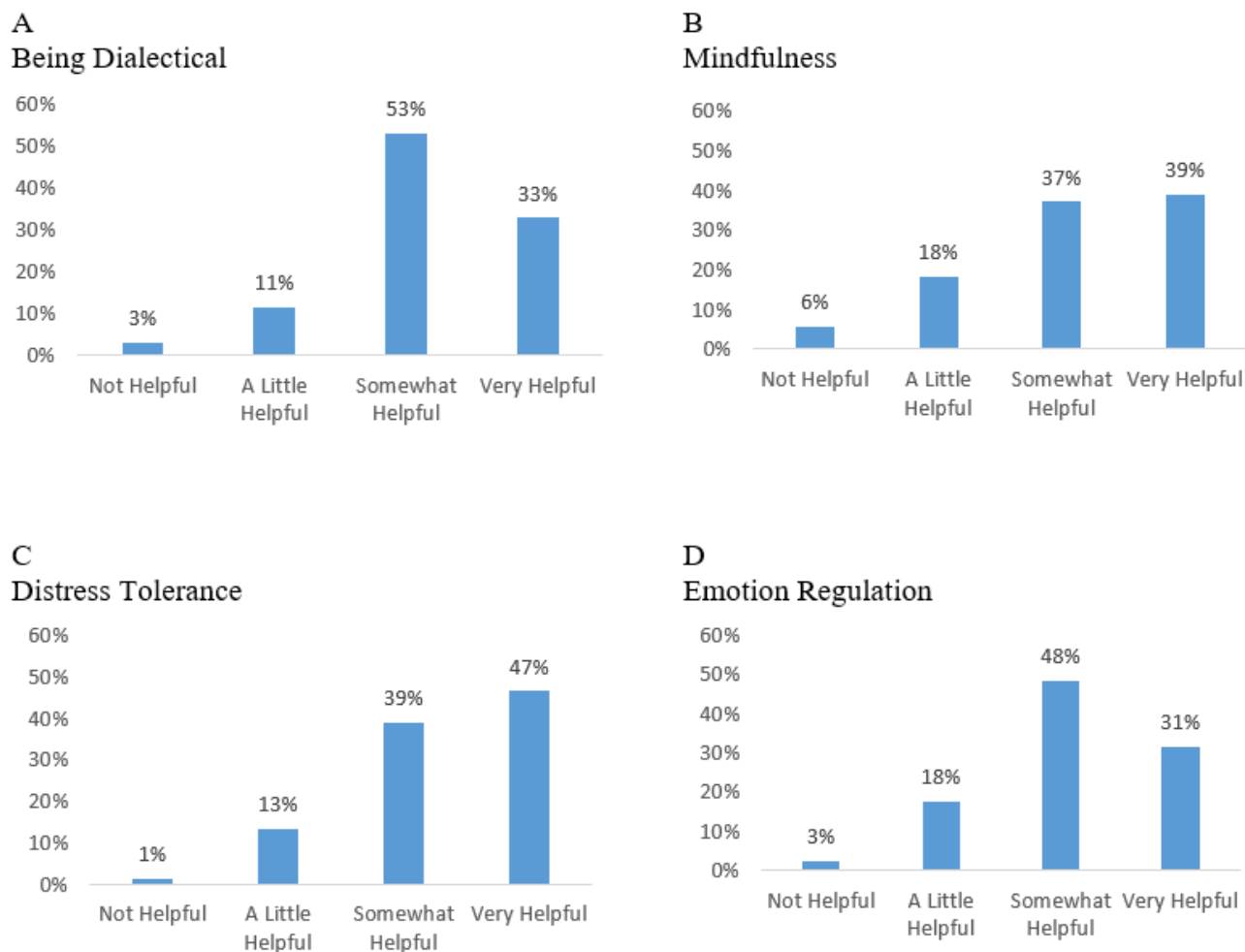
By cultivating positivity in their lives through emotion regulation skills, these students were able to reduce their stress levels, feel better, and perform at a higher level.

Usefulness – Student Views

Present and Future Usefulness. For purposes of this study, “usefulness” is defined as finding the skills helpful in students’ present lives as well as a willingness to use the skills in the future. The quantitative data on usefulness comes from a series of closed ended questions on the post-unit survey. Four questions asked whether the following four skills were helpful: being dialectical, mindfulness, distress tolerance, and emotion regulation. Figure 9 shows the distribution of student responses for each of the skills. “Being dialectical” was not a separate module within the unit like the other three, but it was added here to see if students found value in learning about it. For purpose of analysis, the “somewhat helpful” and “very helpful” responses were combined and referred to as “high helpfulness.”

Figure 9

Student Opinion on the Helpfulness of Various DBT STEPS-A Skills in Relation to Stress



Note. $N=159$

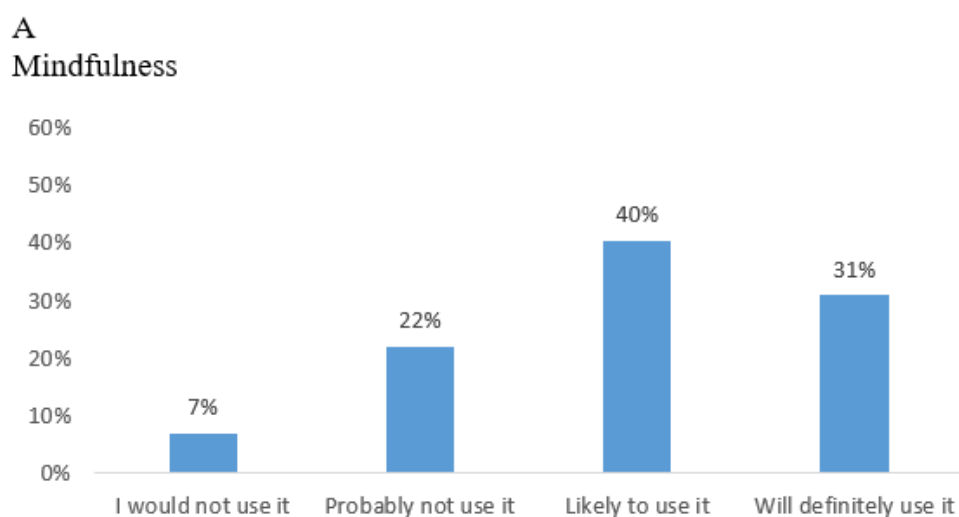
Both “being dialectical” and “distress tolerance” registered 86% ($n=136$) of responses in the high helpfulness range (Figure 9, panels A and C) followed by emotion regulation at 79% ($n=127$) and mindfulness at 76% ($n=121$) (Figure 9 panels D and B, respectively). Distress tolerance was the most positively viewed since nearly half of all students rated it as “very helpful” ($n=74$) and only 1% ($n=2$) rated it as “not helpful” (Figure 9, panel C). Student responses to mindfulness had the highest rate of “not helpful” at 6% ($n=9$) but the skill also

garnered the second highest amount of “very helpful” responses at 39% ($n=62$), making it the most varied in student response (Figure 9, panel B). Overall, with the “not helpful” responses only ranging from 1%-6% and high helpfulness ranging from 76% - 86%, students seemed to indicate that they find DBT STEPS-A skills helpful at a very high level.

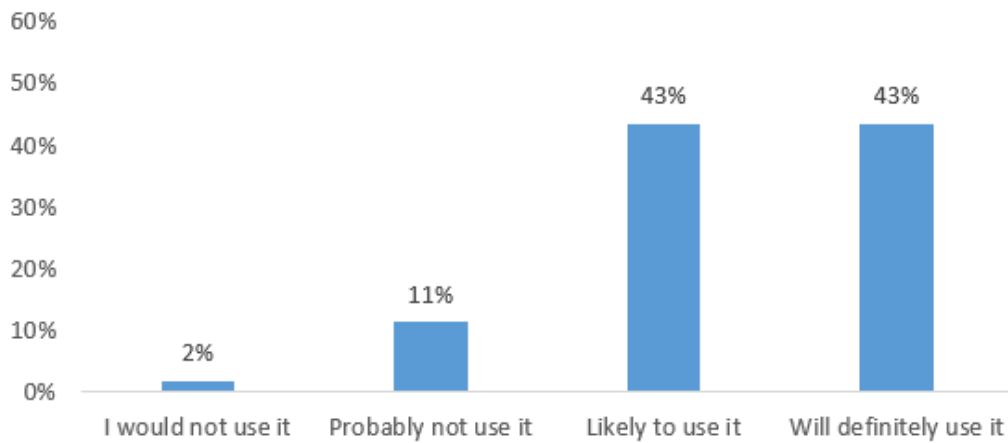
Another way the study asked students if these skills were useful was to have them indicate whether they would consider using the skills of mindfulness, distress tolerance, and emotion regulation in the future. Figure 10 shows the distribution of student responses for each of the skills across panels A-C. “Being dialectical” was not measured in this section since it is a necessary foundational skill that needs to be understood prior to learning the other skills (Mazza, et al., 2016).

Figure 10

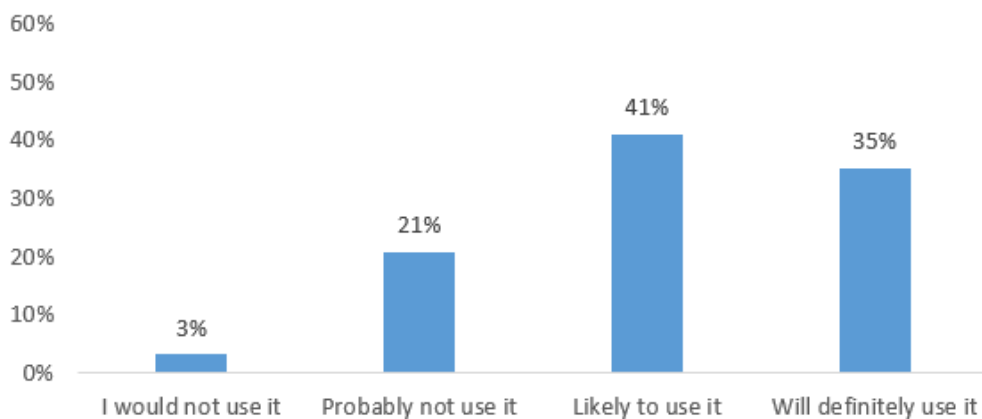
Student Opinion on Whether They Would Use DBT STEPS-A Skills in the Future



B Distress Tolerance



C Emotion Regulation



Note: N=159.

For purpose of analysis, the responses of “likely to use it” and “will definitely use it” were combined and referred to as “high likelihood.” Distress tolerance was the highest likelihood at 86% ($n=138$), emotion regulation was next at 76% ($n=121$), followed by mindfulness at 71% ($n=113$). It is also worth noting that only 2% ($n=3$) explicitly said they would not use distress tolerance, 3% ($n=5$) would not use emotion regulation, and 7% ($n=11$) would not use

mindfulness. These numbers are a strong indication that the students seem to find the DBT skills useful and would be willing to use them in the future.

Why the Students Found the Skills Useful. The qualitative data on student perception of usefulness comes from open-ended responses to the question “When considering all the lessons you learned, discuss one topic you think was most helpful to you and why do you think it is helpful.” Figure 11 displays the results once responses were coded and organized into three main themes from the most frequently occurring codes.

Figure 11

Initial Codes and Emerging Themes about the Usefulness of Skills

Initial Code	# of mentions	Theme	Combined <i>n</i>	Percent of Students Mentioning Theme	Predominant skills identified
Calm	23	Self-discipline	57	37.2	Mindfulness, Distress tolerance
Control	16				
Focus	10				
Meditate	7				
Move to Positive	24	Positive Mindset	53	34.6	Emotion regulation, Distress tolerance
Stopping Negative	17				
Coping Ahead	7				
Wise Mind	5				
Perspective	12	Personal and Social Growth	41	26.7	Dialectical thinking, Mindfulness
Noticing Self	12				
Relationships	10				
Judging	7				

Note. *N*=153

The first main theme is “self-discipline,” which encompassed the responses where students found it helpful to gain control over their own emotions and overcome personal challenges of inattention and stress. Figure 11 shows how 37.2% ($n=57$) of all students mentioned this theme, describing how the skills taught them to gain a sense of calm when stressed, exert self-control over a situation, gain focus, or use meditation to improve their mood and productivity. Within this subgroup, 28 of 57 mention mindfulness skills as the most helpful, 22 identify distress tolerance, and seven refer to emotion regulation. Those who chose mindfulness expressed the value of learning how they can gain control over their environment instead of being controlled *by* their environment, as evidenced by these comments:

This skill helped me to be more aware of my feelings better and helped me get a better understanding as to how my feelings work and what are some of my triggers and from there, what I can do to control myself.

Being more in control of yourself during these periods of stress helps out a lot.

Finding peace and calm in the present is a skill that's life changing, as you have to balance the bad things by recognizing the good things, no matter how small they may be.

Students who identified distress tolerance and emotion regulation skills similarly valued a newfound sense of self-control to manage their emotions.

A lot of the time, I hyperfocus on things that I have no control over and worry so much about it. Using distractions such as talking to others or going on walks has helped me a lot to calm down about the stress, even if it is just in the moment.

I think emotion regulation is the most helpful specifically in sports because I tend to get very emotional at my games and if I keep those bad emotions in check than it will benefit everyone.

A strong message throughout the comments within this theme is that students are facing multiple challenges that heighten their levels of stress; however, learning how to take specific actions to stay focused and not be overwhelmed by their own emotional responses was extremely useful to overcome those challenges.

Another emerging theme was the importance of establishing a positive mindset as 34.6% ($n=53$) of all students referred to this topic. The codes that the researcher combined for this theme had to do with students making conscious choices to become more positive or to avoid negative emotions. Student comments that referenced the DBT skills of “coping ahead” and using “wise mind” were also included (See Table 6). Coping ahead is about rehearsing one’s reaction to anticipated negative emotions and wise mind is a term used to help students understand the importance of balancing emotional urges with reason in order to achieve a positive outcome (Mazza, et al., 2016). Within this subgroup, emotion regulation was the most frequently mentioned skills with 24 of 53 students commenting. This is not surprising in that some of the specific lessons within the emotion regulation module are specifically about accumulating positive experiences, coping ahead, and reducing vulnerability to negative emotions. Students shared,

The topic I thought was the most helpful to me was emotion regulation. I think it’s really common for many teens including myself to have wild and quick negative emotions. I

think trying to take our minds off of these things and to keep a positive mindset is so important.

It helped me to not get too stuck on negative emotions. It's easy to get stressed and go down a loop hole of worrying about so many different things, so focusing on positive things and emotions helped me to stay away from stressing too much.

The students who made comments within this theme also identified distress tolerance skills (21 of 53 references). They found that having a toolkit of strategies to apply in short term crises could help them shift off negative feelings:

I believe that distress tolerance is the most helpful, because it directly deals with the issue of being in a bad mood, and also sets up positive experiences for the future that can be used as crutches to carry you through a tough school week.

It really helped me push away all the negative things in my life. With all of the negative gone, I can become a nicer person.

Throughout the comments of this theme, student sentiment reflected how important it was to maintain a positive attitude, and the DBT skills they learned helped them to achieve this.

The final theme related to usefulness that emerges is personal and social growth. Figure 11 illustrates that 26.7% ($n=41$) of all students write about ways the lessons on dialectical thinking and mindfulness have improved their ability to see different perspectives, notice their own biases, build relationships with others, and be less judgmental of others. These students discuss how introspection helped to be open to the ideas of others:

I think dialectical thinking was the most helpful to me because being able to see a situation from multiple perspectives will ultimately give you a better understanding of your own feelings, and other peoples' feelings.

I am now able to understand that having different views than other people is a common thing, and that no one needs to be persuaded sometimes. Also, I have been able to notice more of when I am wrong because I have been able to see situations from the perspectives of others instead of having tunnel vision on my own perspective. Overall, being dialectical has helped my relationships with other people and being more aware of the world around me.

These students write about how they have gained from the mindfulness training on how to avoid being judgmental:

I used to make a lot of judgements and assumptions, but with the lesson about mindfulness I decided to work on my judgments. As I was working on my judgements and refraining from assuming I realized that it made me feel like a better person and boost my mood for the rest of the day.

[Mindfulness] taught me to be more aware of my internal emotions and my surroundings. I learned to observe and describe a situation without making judgments, and it was pointed out to me how many inaccurate judgments exist in my thoughts. In the future I want to diminish these judgments.

These student responses are indicative of the many student comments on how these skills have increased their self-awareness and social awareness by learning how to observe and describe

their surrounding without judgement and being open to the fact that alternative perspectives exist and can be valid (Mazza, et al., 2016).

Use and Usefulness – Teacher Views

The teacher comments from the focus group interviews reflected similar conclusions to the students, but the teachers also focused on the student reaction to the delivery of the lessons, such as the length of the unit, the timing, and the pedagogy. The teachers' comments also indicate their thoughts on the potential future success of teaching DBT skills in health classes.

In response to a question about their impression of the students' reaction to the lessons, the teachers expressed that students saw the value in the skills, but they were unsure whether they could describe evidence that students used the skills. One comments,

My students enjoyed it, and I think they can see the benefit of it. It's just then putting it into practice. They have to figure out the next step.

Another teacher observed that students responded strongly to what she felt were the “practical” use of the skills and that they found immediate benefit. As an example, the lesson on the skill of coping ahead provided a calendar so students can plan their opportunities to study for midterm exams and articulate specific breaks and rewards. All the teachers mentioned that this was well received by the students. Another teacher felt students responded positively to an assignment where they created a “survival kit” of distress tolerance skills that they could remember when they found themselves stressed in the future. Here are some of their comments:

A lot of them liked the survival kit – writing down what's helpful.

I had a lot of students talk about how they used a lot of the distress tolerance outside of the classroom and really benefit them while trying to study for midterms.

In reading my feedback, I saw them talk about distress tolerance a lot. I can't say any of them said anything to me in class.

This last comment reveals another common theme. While the responses to the survey questions reveal a very high rate of using the skills, the students did not express this directly to the teachers. Students seemed reluctant to discuss their use of the skills aloud in the classroom setting. One teacher re-evaluated her perception of student usage between the comments she made at the mid-point interview and the end of the unit after reading the student responses. She expressed,

I think the last time I was asked this question, I said about half my students were buying into it. But after going through the results, I think more than half ended up relating it to their life and actually found a time where they're actually using the skills.

Comments such as this show that students were more willing to share how they used skills through their writing than in class discussions.

Teachers also commented on the ways they perceived the skills to be useful in students' lives. When discussing the planning calendar mentioned earlier, the teacher felt it was helpful for students to show they had a study plan to their parents. She states,

At least it was a good conversation between them and their parents, about how they're going to study for the midyear assessments, which I think helps relieve some of the stress for them. Because they're worried about grades and their parents being disappointed in

them and them being disappointed in themselves. So it gave them a plan and the skill to actually utilize in real life.

Other teachers highlighted the lesson on “being dialectical,” because students shared how this helped them maintain good relationships with others. One teacher mentions,

Conflict resolution. I had a lot of kids talk about how learning to be dialectical was beneficial and how there's more than one side of a situation - and that they need to look at all perspectives. I think that'll help them in terms of peer-to-peer conflicts.

Another teacher adds to this by saying,

A few of them said, “I'm not so quick to judge when I see something happening”

Or, “I don't know the full story.”

These comments reflect similar themes to what the students mention in their responses, specifically the areas of a positive mindset and personal and social growth.

When asked about the future of teaching DBT skills in health classes, the teachers agreed it was important to continue, but changes are necessary regarding the delivery of the lessons. To maintain or increase student use of the skills outside of class and increase the students' perception of usefulness, teachers felt it was necessary to focus on student buy-in and engagement:

To get the buy-in, they have to see the benefit. And if they don't see the benefit, they are just being “told” it's good for them. We all know that teenagers don't do that...

DBT is used when the person has identified that they have a problem and that they are actively searching for ways to work through this distress that they're experiencing.

So I think that's something we need to look at and see how we can do that. I think it will help with creating that buy-in if we can find a way to help them understand why they would need this.

Universally, the teachers shared that students felt the unit was too long to maintain their attention and that the lessons need to include more activities and less delivery of content. This is a reflection of the fact that DBT STEPS-A introduces a lot of vocabulary and uses a number of acronyms as mnemonic devices. Also, to give students ample opportunities to work on mindfulness, the curriculum suggests starting every lesson with a mindfulness practice. For some students, this repetition became a distraction:

I had maybe three quarters of my kids just said it needed to be more interactive and less repetitive.

Related to this, teachers shared that students experienced mindfulness practices in middle school, but did not find those exercises helpful as staff delivered the lessons over the loudspeaker and many students did not want to participate in such a public fashion in front of their peers.

The public nature of practicing these skills in a general classroom leads to a final suggestion that was a common theme among the teachers. The DBT curriculum suggests giving homework to students to practice the skills on their own outside of the classroom. The health teachers originally agreed they would not be assigning much homework as part of this intervention, but when they did, they found the students more willing to try the skills. Here is one teacher's musing on an assignment to watch a TedTalk video about mindfulness and then practice at home:

I had them watch it. I had them meditate and I had them reflect on it. And they were into it. They said the school setting wasn't it. It's hard to meditate as a class... I don't think it's a bad idea having them try some of this stuff at home and reflecting... Because then you could bring it into a class and say, "Well, I tried this and this works" and someone else say, "Well, I did this and it didn't work" kind of discussion.

High school is a time when students are worried about how they appear to others, so practicing skills in front of each other seems like a risk. By focusing on the length of the unit, the ratio of content delivery to class activities, and opportunities to practice outside of class, the teachers believe they could build the student buy-in to get them to find the skills even more useful.

As a way to check reliability for qualitative analysis of the teacher focus groups, an outside researcher coded the transcript of the teacher interview. The primary researcher established an initial set of four focus areas prior to the final round of coding: student opinion, teacher opinion, delivery critique, and personal use. Using the same categories, the outside researcher identified 15 initial codes that matched the categories and the primary researcher identified 19 codes that matched. One can explain this difference by the primary researcher having a richer understanding of DBT as the extra codes were specifically related to DBT skills. Most notably, 100% of codes that the outside researcher identified were similarly identified by the primary researcher, giving this study a very high rate of inter-coder agreement (Creswell and Plano Clark, 2018).

As a final note on the student responses presented earlier, one will notice that many of the student quotes specifically identified school-related issues as the primary cause of stress, whether

it was the midterm assessments, studying for routine tests, or completing homework. Almost half ($n=70$) of the students identified academics as the main reason they were using the DBT skills. This confirms the numerous studies that school is a major source of stress for teens which affects their ability to learn (Bernal-Morales, et al., 2015; Humensky, et al., 2010; McArdle, et al., 2014). DBT STEPS-A is a viable resource to combat academic related stress.

Chapter V: Discussion

Summary of the Results

The aim of this study was to explore whether a partial implementation the DBT STEPS-A curriculum would impact student stress levels. The study gathers both quantitative and qualitative data to measure whether students would use the strategies (usage), find value in the strategies (usefulness), and whether the teachers delivering the lessons would find the curriculum effective.

The study evaluated student usage through analysis of practical usage and recent usage. For practical usage, surveys asked students questions that focused on the four modules taught in the DBT STEPS-A curriculum: mindfulness, distress tolerance, emotion regulation, and interpersonal effectiveness. The paired samples *t*-test results comparing pre- and post-unit survey questions showed statistically significant differences in the means, indicating that students reported purposely using skills they have learned at a much higher rate after the intervention. For recent usage, the post-unit survey posed a series of closed and open-ended questions to students whether they used the skills they learned outside of class. A large majority of students indicated that they had used all three of the skills: 77% used distress tolerance skills, 69% used emotion regulation skills, and 62% used mindfulness. When asked to describe why they used the skills, student responses reveal three major themes: distraction, purposeful mindset change, and cultivating positivity.

The study evaluated student perception of usefulness by measuring how helpful the students found the skills and whether they would use the skills in the future. A large majority of students rated each of the skills as helpful: 86% found being dialectical and distress tolerance

helpful, 79% found emotion regulation helpful and 76% found mindfulness helpful. These percentages paralleled student responses for whether they would use the skills in the future: 86% said they would use distress tolerance, 76% would use emotion regulation, and 71% would use mindfulness. Three major themes emerged from the questions asking students to describe why they found the skills helpful: students looked to increase a sense of self-discipline or self-control, they actively sought a positive mindset, and they hoped to grow both personally and socially.

During two rounds of the teacher focus group interviews, the teachers emphasized how students felt the lessons needed more activities rather than high doses of content. The lessons the students appreciated the most were the ones in which they saw immediate benefit, such as creating study calendar to help stay organized or documenting a list of helpful tactics to utilize when feeling stressed. Teachers felt that building student buy-in was critical to the success of the curriculum, and the key to making that happen was to include more interactive activities within the classroom and opportunities to practice the skills outside the classroom. Another important takeaway from the teachers was the reticence displayed by students to openly discuss emotions in the classroom with their peers or the teacher. Their report of student willingness to discuss the skills in conversations did not reflect what the students wrote about in regard to their high usage and perceptions of usefulness. Overall, however, the teachers felt that teaching the skills is worthwhile, the students will benefit, and it is worth the effort to adapt future lessons to continue teaching the curriculum.

Discussion of the Results

When considering the first research question, the data seem to indicate that to a large extent, a partial implementation of the DBT STEPS-A curriculum is an effective way of teaching

stress reducing strategies to high school students. The data point to a high degree of usage of the skills due to the intervention and a high level of perceived usefulness.

In reviewing the difference in statistical means of how frequently students purposely used skills they have learned pre- and post-intervention in Table 9, interpersonal effectiveness increased by 8%, distress tolerance increased by 14%, mindfulness increased by 18% and emotion regulation increased by 74%. It is not surprising that interpersonal effectiveness was the lowest as the teachers eliminated the lessons for this module. However, the authors of the manual describe how essential learning from each of the skills may apply across modules (Mazza, et al., 2016), like using one's mindfulness to be fully present or using emotion regulation to reduce one's vulnerability to strong reactions can certainly have a positive effect when interacting with others. The large increase in the use of emotion regulation could be because at the time students took the post-unit survey, they were also preparing for midterm assessments the following week of school, which can be a very stressful time full of negative emotions. The unit's lessons on emotion regulation focused on the importance of building resilience to negative emotions and how to cope with future anticipated emotions, which research has shown to be effective in helping control undesirable feelings (O'Brennan, et al, 2020; Suldo, et al, 2018). The results of the survey showed how these lessons resonated deeply for students during a period of high stress, since students feel tremendous anxiety when it comes to school and high stakes grades (Moeller, 2020; Wuthrich, et al., 2021). The *p* values reported in Table 9 indicate there is very little probability that these results are due to chance and that the intervention may have played a major role in giving students the tools they need to manage practical, day-to-day stressful situations.

The data measuring recent usage correspond with the strong results from the practical usage data. By indicating a high level of recent use outside of class, students showed that they are adopting the skills learned in the classroom into their daily lives. Additionally, the finding that each of the skills of distress tolerance (77%), emotion regulation (69%) and mindfulness (62%) all had high rates of recent use (Table 10) suggests that all aspects the curriculum made an impact on students. These levels are particularly promising considering the larger and varied sample size in this study, as previous similar studies utilized samples of approximately half the size of this sample (Flynn, et al., 2018; Zapolski & Smith, 2017).

The convergent mixed methods design proved informative since the qualitative data corresponded and supported the quantitative results, and combining the results provided insight into why students use skills. Distress tolerance was the skill most frequently mentioned, reflected in 47% of students responses to the open-ended prompts (Table 11). It is possible that students were comfortable practicing distress tolerance skills such as “Wise Mind ACCEPTS”, “Self-Soothe,” “IMPROVE the moment”, and “TIP” (see Appendix B) because there is a wide range of possible strategies to choose when looking to tolerate intensely painful emotions or stressful situations (Mazza, et al., 2016). When students have choice and autonomy to choose what works best for them, there is a greater chance they will engage with the material (Beachboard, 2020). One of the themes associated with distress tolerance that garnered frequent student commentary was the theme of distraction (Figure 8), or escaping from high-pressure situations. Not unlike adults in the workforce, students look to take a break when feeling high levels of stress (Wiens, 2017), and the distress tolerance skills they learned provided a healthy way to do that. The equally popular theme of making a purposeful mindset change to gain focus and calm (Figure 8) is evidence that teaching students to have volitional control over their

emotions can be a powerful strategy (Imhof & Schulte-Jakubowski, 2015; van Genugten, et al., 2017). The skill of acquiring focus not only relies on distress tolerance skills, but can certainly involve mindfulness and emotion regulation skills. This highlights one of the main reasons DBT STEPS-A can be a high-leverage strategy. By presenting a wide range of skills across the curriculum, students can gravitate toward the ones that best serve their needs and help them find a comfortable way to cope with stress (Flynn, et. al., 2018; Hanson, 2016). In aggregate, these results on usage provide an answer to Sub-question 1 of Research Question 1: it appears highly likely that students will use the strategies of DBT learned in a general education setting.

The data results related to the students' perception of usefulness could also be a strong indication that DBT STEPS-A is an effective way of teaching stress-reducing strategies to high school students. The quantitative results showed that students overwhelmingly found the strategies helpful and very few rated the skills as not helpful. Students also indicated they would use all the skills in the future at very high rates, which further showed they found value in the strategies. When students see something as personally meaningful or helpful to their own growth, they are more likely to stay engaged with it in the future (Mathewson, 2019). Once again, distress tolerance skills had the highest rating of usefulness (86%, Figure 9) possibly because students understood that can be prone to impulsive reactions (Steinberg and Chein, 2015) and valued the benefit of finding ways to find an immediate reduction in pressure (Schaich, et al, 2021). Students also found "being dialectical" equally as helpful (86%), as learning how to see situations from multiple perspectives and valuing alternative arguments seemed to make a strong impression. This was a very promising result in light of the many reasons social awareness is a critical skill for adolescents in terms of civic understanding, diversity and equity, and showing concern for others (CASEL, 2022). It is important to note that

while emotion regulation and mindfulness were slightly lower than distress tolerance, over 70% of students indicated they found them useful and would use these strategies in the future, once again showing that the variety of skills provided in DBT STEPS-A can resonate across a wide range of students (Miller, et al, 2020).

The qualitative data around usefulness allow for comparison to the quantitative results, and the themes that emerge not only verify that students value all of the skills, they also provide insight into why the students found the skills useful. Figure 11 shows how students sought higher levels of self-discipline and recognized the need for focus and calm. According to Linehan's (1993) biosocial theory, adolescents are more prone to emotional vulnerability, especially in an environment like high school where they do not feel validated (Granato, et al., 2021; Doughty, et al., 2021). It is feasible that students valued the calm and control they gained from the DBT skills because of their frequent dysregulation and the fact that they could be in more control of themselves in an unstable environment. Another popular theme was the importance of moving to a positive mindset and avoiding negativity. Students shared that staying positive was a key to accessing their best performance setting themselves up for growth and learning. Having a growth mindset and a belief that one can develop can be a key factor in academic achievement (Yeager, et al, 2019). Additionally, some see optimistic thinking as a way to build resilience and overcome adversity (Robitaille and LeBuffe, 2019) and has become one of the attributes measured on social emotional skill assessments like the Devereux Student Strengths Assessment (DESSA), which are growing in use in school systems (Aperture Education, 2022). The final theme captured in the data, personal and social growth, helps to illustrate that students want to have strong relationships with others and be aware of how their own judgements and emotions may play a part in shaping those relationships. Once again,

students valued the wide range of skills presented in DBT STEPS-A, for even though students ranked mindfulness the lowest in most aspects of the post-unit survey, there were still a number of students who mentioned the value of being dialectal and mindful throughout the commentary of those wanting to grow personally and socially. With the research supporting the effect of mindfulness on student stress and depression (Dunning, et al., 2019; Gutierrez, et al, 2019;) and self-understanding (Titone, et al, 2018), it is important for educators to not abandon the idea of including it as part of classroom practice despite it not being the most popular concept with students. In taking in all the data on student perception of usefulness, the answer to Sub-question 2 of Research Question 1 is that it is highly likely that students will find DBT strategies useful.

Research question 2 sought to explore the degree to which teachers find the DBT STEPS-A curriculum as an effective way of teaching stress-reducing strategies. One significant inconsistency that arose in this study was the lack of participation by the students in the classroom setting versus their responses to the survey questions. One possible explanation was that this unit took place during the winter of 2021-2022 when a mask mandate was in place in all Connecticut schools to protect from the spread of COVID-19, and students were less willing to participate when wearing masks (Collar, 2021). Another explanation could be that students have a hard time opening up to their peers and teacher about their emotions in a public space like a classroom, despite the evidence that classrooms are an essential place to promote mental well-being (National Collaborative on Education and Health & Mental Health America, 2016). One student wrote,

It is hard for me to relax with all my peers around and know how any of them could judge me at any time.

The irony is that the lessons around mindfulness focus on how to *not* be judgmental of others, but statements like the one above are a reminder of the need to create an environment where students feel safe and teachers establish ground rules for mutual respect and a willingness to share (Kisfalvi & Oliver, 2015). Health class is often a place where students learn about healthy decisions and stress management, so it can be an environment in which students discuss personal feelings. However, this may depend on whether teachers have a chance to develop relationships with students since this is often the key to getting students to open up (Frisby & Martin, 2010).

Despite the teacher's impression that students felt the DBT unit lasted too long or the need to include less direct teaching of content, they exhibited a commitment to revise the lessons and incorporate a different pedagogical approach. This sends a strong message that they feel there is value to the lessons, the students are in need of support to manage stress, and that the DBT STEPS-A curriculum can be an effective way to teach these strategies. This commitment is so critical, because, in order for students to fully gain from stress-reducing or mindfulness programs, teachers need to have full understanding of the strategies, be actively involved in the delivery, and be fully supported with training and resources (Carsley, et al., 2017; Wiglesworth & Quinn, 2020). In this project, the formal training and access to a manual of suggested lessons provided crucial assistance in launching the DBT unit, but the district needs to maintain support for the teachers to make the necessary changes and deliver lessons that are more effective.

Finally, it is important to discuss the improvement science process and its effect on this study. After the first five lessons, the teachers took part in a focus group interview as a process measure of the intervention. Following the "Plan-Do-Study-Act" cycle of improvement science, the focus group feedback from the "do" stage led the intervention team to rethink the

pedagogical approach (“study” phase), which in turn led to changes in the delivery of future lessons (“act” phase). Since the DBT STEPS-A curriculum was new information to the teachers, the early lessons on being dialectical and mindfulness focused heavily on new vocabulary, definitions, acronyms, and descriptive lists to establish a foundation of knowledge for both the teachers and the students. After the focus groups, new content within lessons was scaled back, and the team created activities that asked students to make personal connections to the material, especially. These changes might help explain why the modules of distress tolerance and emotion regulation consistently scored higher in terms of use and perceived usefulness than mindfulness on the post-unit survey. The cycle continues, as the results of the final assessment can now launch a new round of the “plan” phase to make the changes discussed in prior sections to increase student buy-in and maximize the learning from the curriculum.

Limitations of the Results

The first limitation of this study relates to the sample. Since the application of the intervention was a curricular decision by the health department, all students enrolled in the course received the intervention, which means that participants were not randomly assigned and there was no comparison group with which to compare results. Without these aspects of a true experiment, it is harder to claim that the treatment of the DBT STEPS-A curriculum was the cause of the results (Plano-Clark & Creswell, 2015). This is partially mitigated by measuring student responses to questions before and after the intervention, which indicated an increase in frequency of skills used (Table 9). Another limitation of the sample is that with 76% of population being white, it is not representative of the racial/ethnic diversity of all high school students and this limits generalizability. This sample approximates the diversity of the overall

school population where 79.6% of the population is white. While these percentages do not reflect society, as a practical action research project, the aim was to focus on a problem in the local setting, and the demographics of the sample match the overall demographics of the school population.

Although one cannot generalize the results of this study to more diverse school settings, it does not preclude success if in these settings implemented. For example, Zapolski and Smith (2017) conducted their study in four urban schools in the Southeastern United States where students who identified as African American was the largest racial/ethnic group within the study (47%), and they concluded that teaching DBT skills reduced intentions to engage in risky behavior. Another study by Yeo, et al. (2020) was not conducted in a school, but verified that ethnic minority adolescents showed improvement in self-regulation after undergoing DBT STEPS-A treatment in a clinical setting. While further study would be necessary, initial findings seem to indicate that demographic diversity would have little impact on the effectiveness of a DBT STEPS-A intervention.

A second limitation is that the team did not implement the full set of modules from the DBT STEPS-A curriculum. Two lessons from the interpersonal effectiveness module were left out of the original intervention plan due to time limitations and adjustments made to help students process some of the denser foundational information and skills. The DBT STEPS-A manual provides 30 suggested lessons, and the intervention ultimately delivered 13 of these lessons within 12 class sessions. However, the authors of the DBT STEPS-A manual acknowledge that schools need flexibility in delivery models, such as variations in the frequency of lessons, the length of the lessons, and the number of lessons (Mazza, et al., 2016). Therefore,

despite the modified implementation, student feedback on the lessons is still informative and meaningful.

Another set of limitations relates to the adults involved in the study, namely the teachers and primary researcher. Since four different teachers delivered the curriculum over nine sections of the grade 10 health classes, there is the chance that the fidelity of the intervention delivery could be compromised. However, the primary researcher designed the lesson plans for all the teachers to use to establish a common set of topics, common resources, and common activities that all teachers used in their preparations. Additionally, all teachers and the primary researcher received the same training by experts in DBT STEPS-A. The primary researcher provided the formative and summative assessments that the four teachers implemented universally, which also helped to ensure that the material leading up to the assessments was consistent. Additionally, the four teachers agreed to follow the same sequence of lessons. While some variations existed in small assignment expectations and one lesson related to emotion regulation was not taught to four of the nine sections, all staff delivered the other lessons to all sections and all sections received the same preparation for the final assessment.

Some may consider the positionality of the primary researcher as the principal of the school as a potential limitation, as it could have led to response bias on the part of the students or the teachers. A number of mitigation strategies were put in place to limit the impact of the researcher's role. As described earlier, the principal does not directly supervise the health department teachers, and he provided the teachers a letter stating that their role in the research had no bearing on their supervision. Additionally, the health department had already committed to receiving training and piloting DBT STEPS-A during the targeted school year to determine the extent to which they want to make it a permanent part of a future curriculum revision. The

teacher's evaluation of the program did not just relate to the research project but also to their own future planning. Another mitigating measure was to invite the department chair and an outside neutral participant who is a former principal in the district to the focus group meetings. Their presence helped ensure the integrity of the interview process and they could serve as witness that the primary researcher would not influence the teachers' responses. A mitigating factor in terms of student influence is that all the quantitative data points came from questions posed to students that carried zero weight toward the students' grades. The primary researcher informed the students that their responses to questions on use and usefulness did not factor into their grade and that the researcher would read them without names attached. This ensured that they were free to respond honestly without ramifications. In the end, the primary researcher was able to use his position to provide substitute coverage for the teachers during training, utilize communication channels with parents to secure their comfort allowing students to participate, and secure resources for teachers to implement lessons. Some could consider the primary researcher's positionality a strength in being able to create an environment to ensure as full an implementation of the intervention as possible.

Recommendations for Practice and Further Study

The results of this study indicate tremendous potential of using DBT STEPS-A as a way to teach stress-reducing strategies in the general classroom setting to a large number of high school students. The feedback from students and teachers about the delivery of lessons was very consistent and provide good recommendations for future practice. Practitioners should be mindful of the amount of content delivered within a single class session, and they should present new concepts that may be difficult to process in digestible bites with ample opportunity to process. Part of that processing includes opportunities to practice the skills, which based on the

feedback can come in two forms. First, low-risk activities should be included in lesson plans where students can discuss concepts either through theoretical situations or examples that do not require students to reveal deeper, personal emotions. As an example, instead of asking students to discuss their personal relationship with their parents, teachers can use an example from a television show or movie clip to depict a stereotypical relationship which then may allow students to draw their own personal connections privately. Second, teachers should give students the opportunity to practice skills outside of the classroom as part of low-risk, formative assignments. By trying the skills on their own in an environment they choose, students can draw on these experiences to make connections to the lessons in the classroom which can then lead to greater participation in class. Also, by increasing student agency by giving them choice in how and when to practice the skills, they may be more open to engaging in the practice.

Recommendations for further study include a longitudinal follow-up with students who have received the lessons and extending the study to other schools that are using DBT STEPS-A. Grade 10 was purposely chosen so that students could learn the skills prior to the upper grades of high school that tend to be more challenging than the early years (Wuthrich, et al., 2021). By asking students about their use of the skills one or two years after the intervention, researchers will have a good sense of the staying power of the lessons and may make additional adjustments to increase the likelihood of retention. Additionally, this study and the theory of improvement was uniquely suited to the conditions and drivers present in the school and local community. While the data are a strong indicator of the success of the intervention, one may not be able to generalize the results to other schools or districts. As mentioned above, school personnel can deliver the DBT STEPS-A curriculum a number of different ways, and different schools are going to make different choices based on the schedule, resources, teacher availability, extant

programming, and perception of need. Other schools could replicate the survey questions and process used in this study, but the schools must interpret the results within the context of that particular community and the choices made regarding the lesson delivery.

A final consideration of future practice and further study has to do with the overlap between a focused curricular initiative such as DBT STEPS-A and a school's overall social and emotional learning (SEL) programming. As depicted in Figure 6 of Chapter II, there is a high degree of correlation between the STEPS-A skills and the five core SEL competencies identified by CASEL: self-awareness, self-management, social awareness, relationship skills, and responsible decision making (CASEL, 2022). The themes that emerged from the student comments about what resonated most from the DBT lessons further underscores the correlation with the CASEL competencies. As depicted in Figure 12, there is considerable overlap between what the students felt was most helpful about DBT STEPS-A and the core SEL competencies.

Figure 12

Themes Identified from Student Input on DBT STEPS-A and the Overlap with SEL Competencies

Theme from Data on Perceived Helpfulness of DBT STEPS-A	Predominant DBT Skills	SEL Competencies (CASEL)
Self-discipline	Mindfulness, Distress tolerance	Self-Awareness Self-Management Responsible Decision Making
Positive Mindset	Emotion Regulation Distress Tolerance	Self-Awareness Self-Management Relationship skills
Personal and Social Growth	Dialectical Thinking Mindfulness Interpersonal Effectiveness	Social Awareness Relationship Skills Responsible Decision Making Self-Management

In terms of future practice, this means that schools searching for SEL programming can utilize DBT STEPS-A as a means of SEL lesson delivery, or schools can use DBT STEPS-A to augment programming in place or expand SEL to a broader population of students. Researchers can design studies to use existing SEL assessments after students receive the DBT curriculum to explore this overlap even further.

Conclusion / Next Steps

Students are facing high levels of stress in high school, but often times, students are not able to articulate how to solve the problem stress (Lee, et al., 2018; Terada, 2018). While this may also be true for students at Fairfield Ludlowe High School, what is clear is that they want to learn stress-reducing strategies and feel it is appropriate for the school to teach them. In response to the question, “Do you think schools should help students learn strategies to reduce their stress?” 88% of students in grade10 health classes ($n=159$) responded, “Yes.” Between the research presented in the early chapters of this paper that stress has detrimental effects on student mental health and academic performance and the students’ articulated desire to learn strategies, the school has a clear mandate to address this problem.

The root cause analysis identified a number of factors that cause student stress, but some fell out of the scope of what a school staff can accomplish within its available resources and level of access, such as the community’s high expectation of academic success and college admission. As a dissertation project following an improvement science process, it was necessary to identify drivers of change that could have a high leverage impact on students within a relatively small window of time and with resources the school had available. Two drivers of change emerged that fit these criteria: teacher practices, *i.e.* the choices of curriculum, and

student self-management skills, *i.e.*, a plan to manage student stress. After an exploration of a number of approaches to teach stress reducing-strategies, the primary researcher found that programs that focused on a single set of skills, such as mindfulness in isolation, did not provide adequate support to students for all the different types of stressful situations that students faced. Eventually, DBT STEPS-A emerged as a viable curriculum because of the approach of addressing a myriad of skills, such as mindfulness, distress tolerance, emotion regulation, and interpersonal effectiveness. Although this study only used a modified version of the full curriculum in grade 10 Health classes, the student response was clear: students are willing to use the skills and found them helpful to help reduce stress. In addition, teachers saw the value in the lessons for students and were willing to commit to the planning and lesson design necessary to maximize student learning. DBT STEPS-A addressed both drivers of change in providing specific practices for teachers as well as concrete skills for students to learn.

The nature of improvement science means that the story does not end here. For next steps, the teachers will meet with the DBT consultant and the primary researcher to debrief on the lessons learned from the pilot implementation of the curriculum. After looking at the results of the student survey, the team will revise the opening lessons of the unit to reduce the amount of new content and only focus on the basic tenets of mindfulness and being dialectical. The lessons will require students to practice the skills outside of class but will also give them choices on how and when to practice the skills. The team will design the assessments to allow students to demonstrate their acquisition of skills instead of asking them to memorize definitions or acronyms.

Since the intervention took place in the fall semester, a new set of grade 10 students will learn about stress-reducing strategies in the spring semester, giving the teachers a chance to implement some of improvements learned from the first round of implementation. The team can expand the project by bringing these lessons to the teachers and students in the other high school within the district. The primary researcher will share the results with area high school principals to provide them with a viable option to help reduce stress among their student communities. The primary researcher also plans to share the results with the consulting firm who trained the staff at the start of the project, as the findings may help them to provide justification to other districts considering DBT STEPS-A.

Finally, the health teachers will gather in the summer months to make additional revisions to lessons as they prepare for the new school year, considering all the data collected from two semesters of piloting the lessons across two schools. Within just 18 months of the completion of this study's intervention, the health teachers will provide two full grade levels, or half of the high school students in the district (approximately 1500 students) with lessons on warding off academic stress and helping them mitigate negative outcomes when they feel overwhelmed by school. Before long, the schools will be providing a roadmap to every student coming through the high school to help them cope with stress, a major issue facing adolescents today. The hope is that they can carry these skills forward for years to come to live healthier and more balanced lives.

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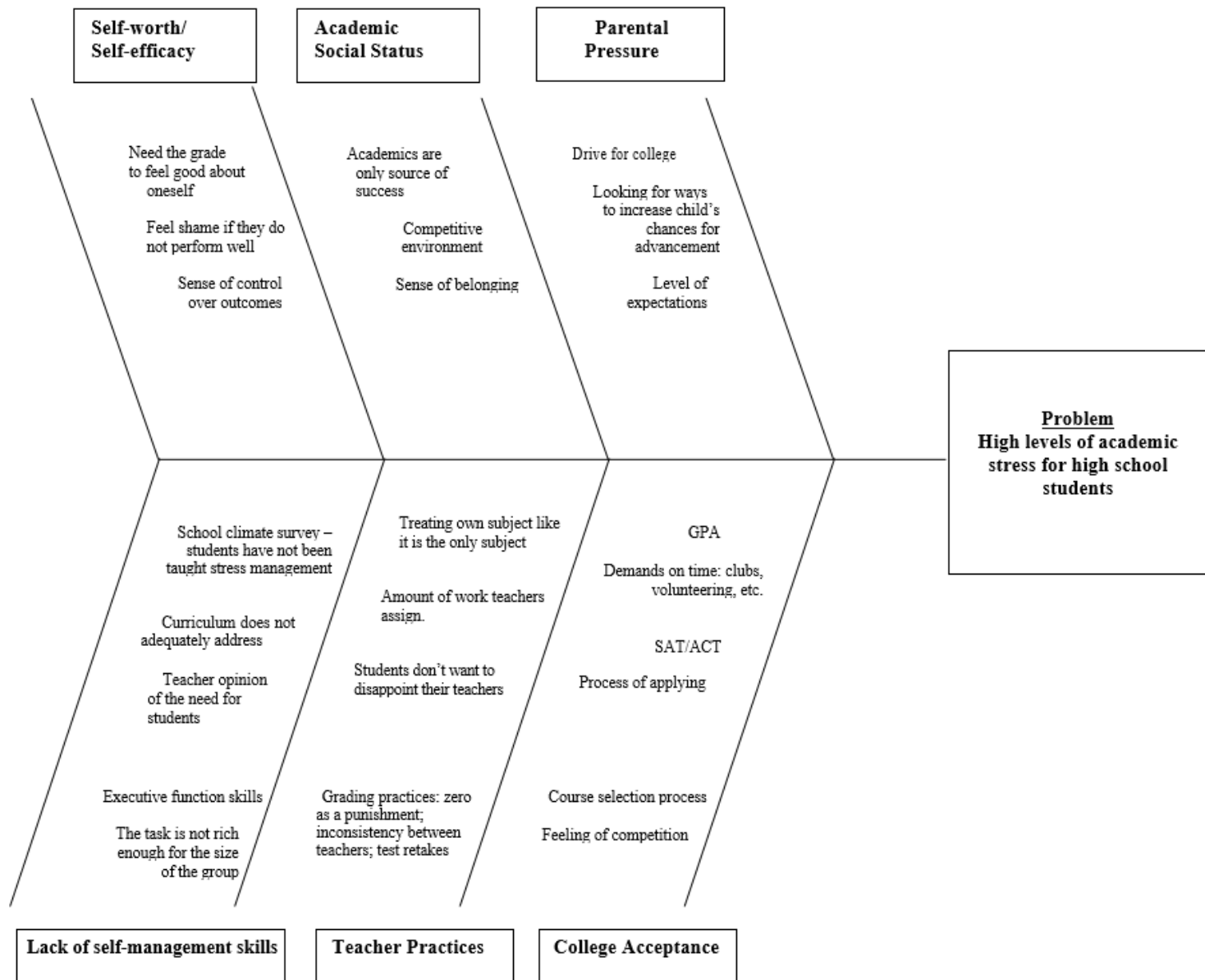
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Appendix A

Fishbone Diagram

Title: Factors Influencing High Levels of Academic Stress on High School Students



Appendix B

Acronyms used in DBT STEPS-A

ACCEPTS = Activities, Contributing, Comparisons, Emotions, Pushing away, Thoughts, Sensations.

IMPROVE = Imagery, Meaning, Prayer, Relaxation, One thing at a time, Vacation, Encouragement.

TIP = Temperature, Intense exercise, Paced breathing

ABC PLEASE = Accumulating positive experiences, Building mastery, Coping ahead, treat Physical illness, Eating, Avoid mood-altering drugs, Sleep, Exercise.

DEAR MAN = Describe, Express, Assert, Reinforce, Mindful, Appear confident, Negotiate

GIVE = be Gentle, act Interested, Validate, use an Easy answer

FAST = be Fair, no Apologies, Stick to Values, be Truthful

Appendix C

Questions for Focus Group Interview with Teachers

1. What is your overall impression with how students are reacting to the lessons that have been taught?
2. What are some examples of how students have responded positively?
 - (Optional follow up) Why do you think that is?
3. What are some examples of how students have responded negatively?
 - (Optional follow up) Why do you think that is?
4. Do you see any evidence of students practicing the skills outside of class time?
 - (Optional follow up) What do you think will increase engagement?
5. How would you describe students' level of engagement with the lesson activities and content?
 - (Optional follow up) With what types of activities do they engage most?
6. What, if any, changes do you believe need to be made to the instructional methods, tasks, or curriculum to improve student engagement or their willingness to try the strategies?
 - (Optional follow up) Talk more about why these changes should be made.
7. Describe any positive outcomes you see in using these lessons with Grade 10 students in Health classes.
 - (Optional follow up) Should the health department continue to use DBT?

Appendix D

Student Survey Questions – Practical Usage

Directions: For each question, 0 = Never; 1 = Rarely (once or twice); 2=Sometimes (more than 2x); 3= Regularly; Answer the question thinking about the LAST MONTH of your life.

- A. When I lose focus, I have purposely used skills I've learned to help me get back on track. (Mindfulness)
- B. When I am in a bad mood, I have purposely used skills I've learned to help me improve my mood. (Emotion Regulation)
- C. When I was feeling upset, I tried to get calm before taking action. (Distress Tolerance)
- D. When I talk to people, I purposely think about what I am doing that will make us get along better. (Interpersonal Effectiveness)
- E. When I was facing a problem in my social life or family, I remembered that there is more than one way to see a situation and that my way isn't the only way. (Mindfulness)
- F. When I recognized a negative emotion, I was able to use a skill I've learned to change that emotion before acting out. (Emotion Regulation)
- G. When something made me really mad or sad, I was able to accept it and move on instead of getting stuck on it for a long time. (Distress Tolerance)
- H. When I was nervous about talking to another person (teacher, parent, friend, etc.), I used skills I have learned to feel more confident. (Interpersonal Effectiveness)
- I. When I was interacting with others, I was able to just observe and describe what was happening without making judgements about the person and not worry about the past or future. (Mindfulness)
- J. When I was feeling angry, sad, or depressed, I purposely thought about something pleasant to help me cope with my feelings. (Emotion Regulation)

Appendix E

Post-unit Survey

1. In general, do you think schools should help students learn strategies to reduce their stress? Yes No Not Sure

2. Before this year, have you ever been taught lessons in school that help you cope with stress? Yes No Not sure

Questions about whether the skills are helpful.

3. Stress is often caused by other people and we disagree with them. Being Dialectical means to see situations from multiple perspectives, accept others' views, to know there is no one absolute truth, and not assume you know what others are thinking. Do you see being dialectical as a helpful skill to have to help with the stress caused by others? (0=Not Helpful, 1= A Little Helpful, 2= Somewhat Helpful 3=Very Helpful)

4. Stress can be caused by losing focus or being confused by feeling the way you do. Mindfulness is supposed to help you focus on the present moment and be aware of what is happening inside and around you, all without passing judgement. Do you see being mindful as a helpful skill to have to help with the stress caused by losing focus? (0=Not Helpful, 1= A Little Helpful, 2= Somewhat Helpful 3=Very Helpful)

5. Sometimes stress makes us feel pain and we act on our emotions impulsively and we end up hurting ourselves or others. Distress Tolerance skills are supposed to help us cope with stress in the short term (using ACCEPTS, Self-Soothe, or IMPROVE) or in the long term (radical acceptance). Do you see Distress Tolerance skills as helpful to get through a stressful time without making things worse? (0=Not Helpful, 1= A Little Helpful, 2= Somewhat Helpful 3=Very Helpful)

6. Stress can sometimes stop us from being positive and it feels like we are surrounded by negativity. Emotion Regulation Skills are supposed to help us turn negative emotions to positive and reduce the likelihood we would feel negative emotions. Do you see Emotion Regulation as a helpful skill to reduce stress by helping you focus more on positive emotions and less on negative emotions? (0=Not Helpful, 1= A Little Helpful, 2= Somewhat Helpful 3=Very Helpful)

The next 3 questions ask about using the skills in the future:

7. Do you think you would use the skill of Mindfulness in the future? Mindfulness is focusing on the present moment and being aware of what is happening inside and around you without passing judgement. (0=I would not use it, 1= Probably not use it, 2= Likely to use it, 3=I will definitely use it)

8. Do you think you would use the skills of Distress Tolerance in the future? Distress Tolerance is coping with stress in the short term - using strategies like ACCEPTS, Self-Soothe, or IMPROVE or in the long term - radical acceptance. (0=I would not use it, 1= Probably not use it, 2= Likely to use it, 3=I will definitely use it)

9. Do you think you would use the skill of Emotion Regulation in the future? Emotion Regulation is turning negative emotions to positive and reducing the likelihood we would feel negative emotions. (0=I would not use it, 1= Probably not use it, 2= Likely to use it, 3=I will definitely use it)

The next three questions ask about using the skills outside of class.

10. Since we started this unit, have you used the skill of mindfulness outside of class? (Like trying to refocus yourself on the current moment or trying on purpose not to judge something). Yes or No

11. Since we started this unit, have you used the skill of Distress Tolerance outside of class? (Like purposely choosing a way to distract or soothe yourself when you felt stressed) Yes or No

12. Since we started this unit, have you used the skill of Emotion Regulation? (Like purposely focus on positive things, schedule positive things, or keep negativity away) Yes or No

OPEN ENDED QUESTIONS

13. If you answered Yes to any of the 3 questions above, please write about the skill you used and how you used it. Why was it helpful? If you answered No to all of the questions above, please explain why you don't think you have used the skills.

14. When considering all the lessons you learned, discuss one topic you think was most helpful to you.

15. When considering all the lessons you learned, discuss one topic that you felt was confusing or not useful to you.

16. What is one thing you would suggest to teachers to make the DBT unit better?