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Implementation of a Novel Social-Emotional Learning Program to Advance Integration of Wellness in Education Practice

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Authors

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Social-emotional learning (SEL) programs emerged over the last 3 decades as school-based curricular interventions to promote positive social behaviors, relationships, and reduce emotional distress in youth (Greenberg, Domitrovich, Weissberg, & Durlak, 2017). These programs may be delivered by a variety of people including teachers, school psychologists, public health professionals, or community volunteers. There is a strong evidence base for the effectiveness of SEL programs on both short and long-term outcomes. In the short-term, students receiving SEL have shown improvements in social, emotional, behavioral, and academic achievement outcomes compared to business as usual or waitlist controls (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Schonert-Reichl et al., 2015). Long-term follow up of SEL programs has demonstrated protective effects for students' mental wellbeing into adulthood, including reductions in anxiety and depressive symptoms (J. D. Hawkins, Kosterman, Catalano, Hill, & Abbott, 2005; J. David Hawkins, Kosterman, Catalano, Hill, & Abbott, 2008).

SEL programs have become a mainstay of school psychology and primary prevention of problem behaviors. Over time, newer programs have developed to accommodate changes in the understanding of learning, behavior, and emotional wellbeing. For example, mindfulness practices incorporated in the setting of SEL have been shown to strengthen the executive functioning skills foundational to other SEL competencies and needed for long-term success (Schonert-Reichl et al., 2015). HappiGenius is a SEL program for elementary students uniquely designed to build students' access to uplifting emotions, self-kindness, self-awareness, attention, and social skills using applied behavioral practice inside and outside of the classroom setting (sample content available at https://www.happigenius.com/). HappiGenius stands apart from other SEL programs in its use of behavioral practice as the main learning tool both in and out of the classroom setting. For the HappiGenius program, behavioral practices thought to promote long-term behavior change replace traditional lecture-based teaching methods.

The Integrated Theory of Health Behavior Change (Ryan 2009) is one model that describes how elements of an immersive SEL program based on behavioral skills practice can be highly effective in facilitating lasting positive changes. The key underlying principle is based on previous research that demonstrates knowledge transfer alone (i.e., traditional lecture based methods) can aid in initiating new behaviors but is insufficient for maintaining long term changes. Briefly, the theory describes that (1) knowledge and beliefs and (2) social facilitation influence self-regulation and engagement in desired behaviors. In application to the present study, social facilitation includes the influence and level of support from teachers, classmates, and parents. Knowledge and beliefs include understanding the facts, but it also includes the individual's behavior self-efficacy, outcome expectations, and congruence between the program and their own goals. In HappiGenius, skills practices in class and at home build students' behavior self-

efficacy, increasing the likelihood of engaging in the practice or behavior later.

HappiGenius includes behavioral activities and discussions that specifically foster self-kindness. Self-kindness, a sense of common humanity vs. isolation, and mindful awareness are the three key components of self-compassion (Neff 2003). Self-compassion is gaining increasing evidence for its importance in emotional wellbeing (Neff 2007). To date, the majority of study in self-compassion has been in adults and adolescents (Neff and McGehee 2010, Neff and Germer 2013, Stolow 2015). Less is known about the trait of self-compassion in children. Even so, self-compassion has been proposed to be a developmentally healthier alternative to self-esteem because of the non-competitive nature of self-compassion (Neff 2003). In theory, HappiGenius delivers the three essential ingredients for self-compassion through activities that develop and support self-kindness, social connectivity and perspective-taking, and mindful awareness. Thus, the program offers a setting to study the teachability of self-compassion for elementary school aged children.

A diverse public elementary school located in a midsize midwestern city chose to employ the HappiGenius SEL program for 3rd grade classrooms in 2021 to support of their students' social and emotional wellbeing, especially in the setting of the COVID-19 pandemic. The objective of this pilot study was to determine whether HappiGenius improves social, emotional, and behavioral targets by comparing pre- and post-program measures in a cohort of students. The primary hypothesis to test this objective was that the SEL program HappiGenius will benefit student positive emotions, self-compassion, attention, self-awareness, and sociality from pre-program baseline to post-program.

METHODS

STUDY DESIGN

This observational survey-based study included 4 convenience sampled 3rd grade classrooms at a diverse PK-5 elementary school located in a midsize midwestern US city with the goal to describe the beneficial outcomes of HappiGenius in the classroom setting. The survey study was approved by institutional IRB and complies with all human subjects' protections. Written parental consent was sought prior to the start of the study. Student assent was sought prior to the completion of the pre- and post-program surveys. Children of parents or legal guardians(s) who did not provide consent for the study and/ or students who did not assent to participate were excluded from data analysis.

SETTING

The HappiGenius program is delivered through the Global Center for Resiliency and Wellbeing. Two weeks in advance of the program start, the HappiGenius program was introduced to parents during a virtual family night event. At that time,

written consent was sought from parents and guardians. One week prior to the program start, a member of the research team met with the classrooms virtually for a dedicated 30-minute block to describe the survey research, potential risks and benefits, and student's rights to assent or not assent. The pre-program survey was delivered 1-5 days prior to the first HappiGenius lesson. Two 45-minute lessons were delivered per week over 6 weeks for a total of 12 lessons (refer to Online Material Supplementary Table 1 for a summary). The post-program survey was delivered within 5 school days following the final lesson (refer to Online Material Supplementary Table 2 for timeline).

DELIVERY AGENTS

A total of 3 volunteer delivery agents from outside of the school facilitated the lessons. Two delivery agents worked with a single classroom and the third delivery agent worked with 2 classrooms back-to-back. The same delivery agent provided all 12 of the lessons to their respective classroom(s). Delivery agents were trained in advance through a 2-hour interactive virtual training session with the developers of HappiGenius. Delivery agents also met once a week with one of the HappiGenius developers to review the lesson plans and prepare for the upcoming lessons.

PARTICIPANTS

Participants included students from 3rd grade classrooms at a public elementary school in a midsize city located in the midwest region of the US. Demographic features were not collected as part of the study, but a summary of select characteristics for the school and the district are included in Online Material Supplementary Table 3. Inclusion criteria were student enrollment in a 3rd grade classroom receiving HappiGenius. Exclusion criteria applied to students whose parents or guardians did not provide written informed consent and students who did not assent to the pre- or post-program survey(s).

Within the 4 participating classrooms, 49 of the 84 (58%) students had parental written consent and student assent. One student transferred classrooms before completion of the program leaving n=48 student participants in the study. For student self-report measures, only students with complete pre- and post-program surveys were included in the study. A flow diagram is illustrated in the Online Materials, Supplementary Figure 1.

VARIABLES AND MEASURES

Variables of interest were selected based on the standards of the Collaborative for Academic, Social, and Emotional Learning (CASEL) and HappiGenius program targets (illustrated in Table 1). Briefly, the CASEL standards for 2021 included evidence of a positive behavioral outcome, improved academic performance, an improved positive social behavior, reduced problem behavior and reduced

emotional distress. Building attention is one behavioral outcome targeted through HappiGenius lessons. Student attention can be directly measured using the attention/ inattention subscale of the teacher-completed Strengths and Difficulties Questionnaire (SDQ) (Stone, Otten et al. 2010, van den Heuvel, Jansen et al. 2017) and indirectly measured on the student-completed Mindful Attentive Awareness Scale for children (MAAS-C) (Lawlor, Schonert-Reichl et al. 2014). Using both of these measures provides both an individual and community perspective on the skill. Improved social skills represent a positive social behavior outcome and are also measured by the SDQ using the prosocial behavior and peer problems subscales. HappiGenius uses primary positive behavioral intervention strategies to reduce problem behaviors, measured by the SDQ using the conduct problems subscale and externalizing symptoms subscale. Finally, HappiGenius targets reduced emotional distress at several levels including building mindful awareness, improving self-kindness, and increasing access to uplifting emotions. These are characterized by student self-reports using the MAAS-C, Self-Compassion Scale for children (Sutton, Schonert-Reichl et al. 2018), and Positive Affect Scale for children (Laurent, Catanzaro et al. 1999, Hughes and Kendall 2009, Fiorelli 2015), respectively. General emotional distress is characterized by the emotional problems subscale and internalizing symptoms subscale of the teacher-completed SDQ. Each of the measures has been validated and found to have acceptable reliability scores in the student population. Students with incomplete responses to either the pre- or post-program self-report surveys were excluded from analysis.

Table 1, **Variable selection based on standards and targets**.

CASEL 2021 standards	**HappiGenius program targets**	**Measurable constructs**
Positive behavioral student outcome	Build attention	Attention/ inattention (SDQ, MAAS-C)
Improved academic performance	Enhance learning	Not measured
Improved positive social behavior	Improve social skills	Prosocial behavior (SDQ) Peer problems (SDQ)
Reduced problem behaviors	Positive behavioral intervention	Externalizing symptoms Conduct problems (SDQ)
Reduced emotional distress	Enhance mindful awareness Improve self-kindness Access uplifting emotions	Internalizing symptoms Emotional problems (SDQ) Mindful awareness (MAAS-C) Self-compassion (SCS-C) Positive affect (PANAS-C-PA)

Table 1, **Variable selection based on standards and targets**. HappiGenius program targets are mapped to the 2021 Collaborative for Academic, Social, and Emotional Learning (CASEL) standards for top-tier evidence based SEL programming and the associated constructs that can be measured (Skoog-Hoffman 2020).

Positive [and Negative] Affect Scale (PANAS) The PANAS is a self-report inventory of the frequency of positive and negative emotions experienced over the last 2 weeks (Laurent, Catanzaro et al. 1999). It is a powerful and widely used tool that was first developed to discriminate between anxious and depressive symptoms. The PANAS adapted for children (PANAS-C) was developed and tested in a clinical sample of n=358 children ages 9-14 years, with high reliability (Chronbach's alpha=0.89) that has been replicated in other studies with student participants (Laurent, Catanzaro et al. 1999, Hughes and Kendall 2009). This was similar to the Chronbach's Alphas calculated in the current study, 0.84 and 0.88 for the pre- and post-survey, respectively. We opted to use the positive affect scale only from the PANAS-C because we specifically aimed to evaluate the program's ability to increase the experience of positive emotions (Fiorelli 2015). We felt that omitting the negative affect scale which includes ranking the frequency of experiencing a list of negative emotions over the past 2 weeks could reduce student exposure to any unnecessary negativity that could be perceived as a risk to our students' safety.

Self-Compassion Scale for Children (SCS-C) The SCS-C is a self-report measure for the trait self-compassion, which includes three dimensions: self-kindness, common humanity vs. a sense of isolation, and mindfulness of current experience. The SCS-C has been validated in a student sample of n=382 children age 8-12 with high reliability (Chronbach's alpha = 0.81-0.83) (Sutton, Schonert-Reichl et al. 2018). In the current study, the pre-survey Chronbach's alpha was lower than expected (0.57) while the post-survey Chronbach's alpha was good (0.83). This might be due to a combined effect of 3rd graders falling in the lower age range tested for the scale (8-9 years old) and teacher-reported delays in student reading and comprehension at the beginning of the year presumably due to COVID-19 interruptions to schooling. The SCS-C has demonstrated convergent validity with a strong positive relationship to MAAS-C scores, self-concept, positive affect, and prosocial goals, and divergent validity from depression and anxiety scores (Sutton, Schonert-Reichl et al. 2018).

Mindful Attentive Awareness Scale for Children (MAAS-C) The MAAS-C is a self-report measure of non-judgmental attention to the current experience from moment to moment. The MAAS-C is a 15-item survey with a 6-point Likert response scale. The MAAS-C measures mindfulness as a unidimensional trait, shows appropriate discriminant and divergent validity in reference to other dimensions of self-awareness and social-emotional wellbeing, and has adequate internal consistency in a non-clinical sample (0.84 in n=593 students age 12-15 and 0.84 in n=286 students age 9-13, respectively) (Lawlor, Schonert-Reichl et al. 2014). The Chronbach's alphas in the current study were acceptable with a calculated value of 0.78 in the pre-survey and 0.82 in the post-survey.

Strengths and Difficulties Questionnaire - Teacher (SDQ-T) The SDQ-T is a well validated and widely used 25-item teacher completed measure of observed

student attention, sociality, and behavioral health (Goodman 1997, van den Heuvel, Jansen et al. 2017). The teacher rates 25 items for each student on a 3 point Likert type scale. The output of the SDQ-T includes a total difficulties score and a prosocial score. The total difficulties score is made up of 4 subscales that measure externalizing or internalizing dimensions. Because this measure relies on observation, it is generally better at capturing externalizing (outward behavior) problems than internalizing problems (Desimone, Smith et al. 2009, Bergold, Christiansen et al. 2019). The 4 subscales include emotional problems (internalizing), conduct problems (externalizing), hyperactivity/ inattention (externalizing), and peer problems (internalizing). For 2 students with 1 missing response on the SDQ-T, a pro-rated value was calculated based on the other responses given in the scale and used to calculate overall scores. The internal consistency for the current study was found to be acceptable with Chronbach's alphas of 0.79 and 0.77 in the pre- and post-survey, respectively.

A program evaluation was digitally delivered to 3rd grade teachers by the school administration in the 2 weeks following the last HappiGenius lesson. The program evaluation included Likert-style questions and free response questions evaluating elements of program implementation, outcomes, and future directions. The results of this evaluation from n=3 teachers were shared with the research team in a de-identified manner.

DATA ANALYSIS

Analysis was completed using JMP statistics software (1989-2021). Descriptive statistical reports were generated from de-identified data for each survey instrument. The outcomes were evaluated using paired Wilcoxin signed rank tests. A type 1 error rate of 5% was used to assess significance. As a secondary measure of significance, Cohen's d effect size was calculated using Hedge's Correction for small sample size ($n<50$). Cut offs were <0.20 no effect, <0.50 small effect, <0.80 moderate effect, and >0.80 large effect.

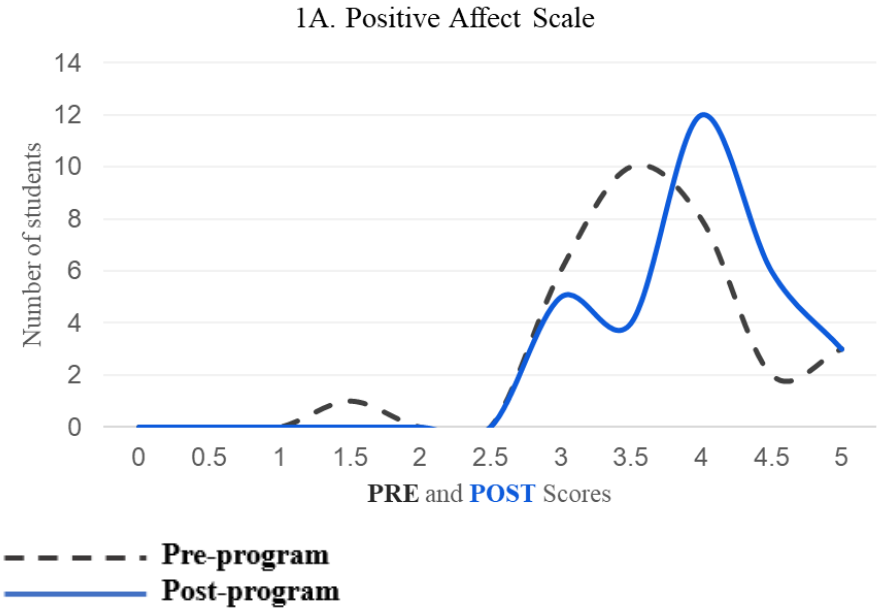
Quantitative responses to the teacher program evaluation were summarized using descriptive statistics. Qualitative responses for each question were reviewed to identify the topics that are summarized in the results. Due to the small sample size, no topics were excluded from the results.

RESULTS

Student reported experiences of positive affect increased from a median (IQR) of 3.57 (3.27, 4.21)) to (4.04 (3.70, 4.32), p=0.04 (Figure 1A). The corrected effect size (corrected Cohen's d = 0.34) supported a small effect on student positive affect. Self-compassion increased from a median (IQR) of 3.04 (2.83, 3.33) to 3.25 (2.85, 3.75), p=0.01 (Figure 1B). This increase in self-compassion corresponded with a moderate effect size (corrected Cohen's d = 0.50). Descriptively, student self-compassion scores changed from a near-normal distribution pre-program to a bimodal distribution post-program with a cluster of students concentrated near higher scores.

Mindfulness scores increased from 3.27 (2.60, 3.67) to (3.47 (2.67, 4.07), but this change was not found to be statistically significant (p=0.56) (Figure 1C). Similarly, there was no effect detected by the effect size calculation (corrected Cohen's d = 0.10). The distribution of both pre- and post-program scores appears to be bimodal with a right shift in the post-program scores.

Figure 1, **Student Completed Measures**.



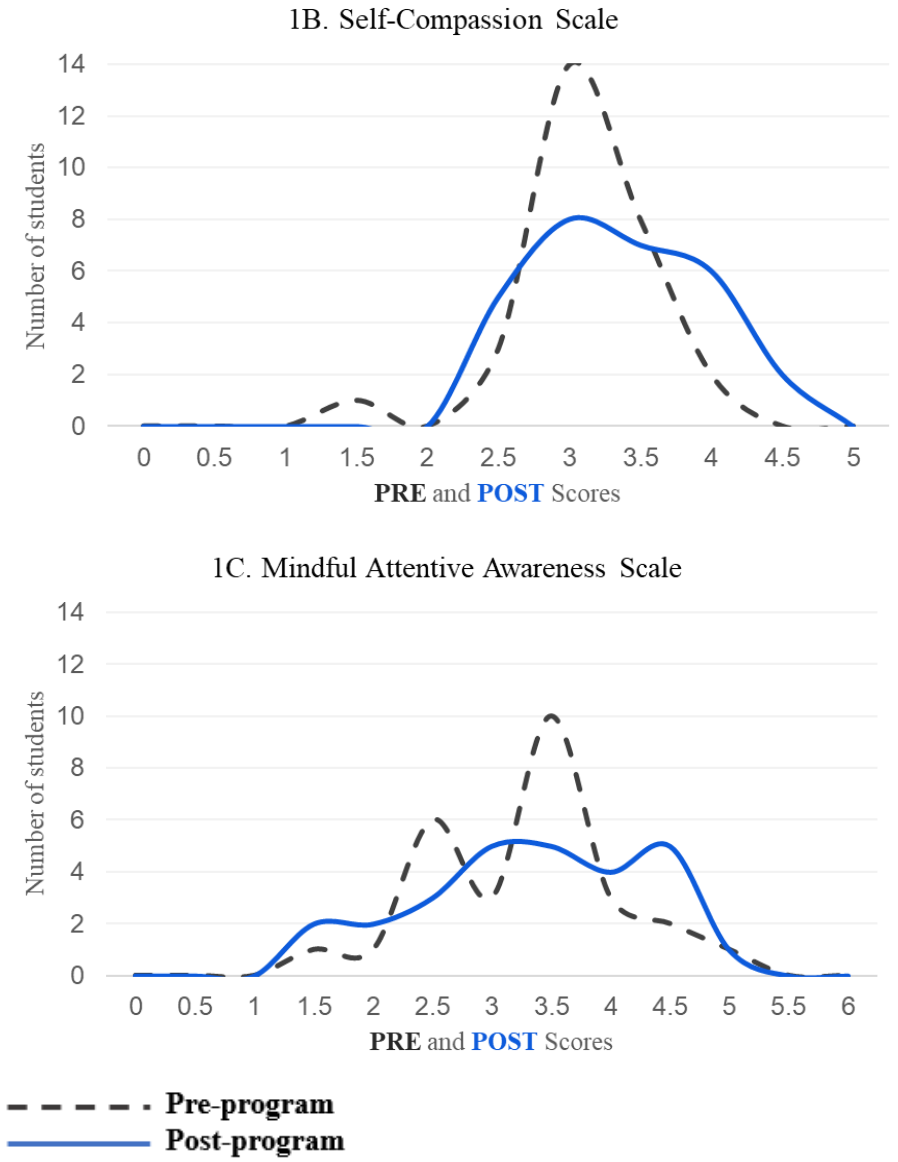


Figure 1, **Student Completed Measures**. Pre- and post-program survey results for (1A) the Positive Affect Scale (for n=30 students pre-program median (IQR) 3.57 (3.27, 4.21) vs. post-program 4.04 (3.70, 4.32), p=0.0435), (1B) the Self-Compassion Scale (for n=28 students pre-program median (IQR) 3.04 (2.83, 3.33) vs. post-program 3.25 (2.85, 3.75), p=0.0094), and (1C) the Mindful Attentive Awareness Scale (for n=27 students pre-program median (IQR) 3.27 (2.60, 3.67)) vs. post-program 3.47 (2.67, 4.07), p=0.56).

Teacher reported total difficulty scores for students decreased significantly from a median pre-program score of 6 (IQR 2.5, 11.5) to 3.5/40 (1.25, 11.5), p=0.00 (Figure 2). On the subscales, difficulties decreased significantly from baseline to program end for conduct problems (0 (0, 2.5) to 0 (0, 1), p=0.05), emotional problems (1 (0, 2) to 0 (0, 1), p=0.00), and peer problems (1 (0, 3) [range 0-7] to 1 (0,3) [range 0-6], p=0.02) (Table 2). The observed decrease in median hyperactivity/ inattention scores was not statistically significant (3 (0, 5.5) to 2.5 (0, 4.75), p=0.32) (Table 2). There was a significant increase in observed prosocial behaviors (9 (6, 9) to 10 (8, 10), p=0.00) (Figure 3).

The teacher completed program evaluations addressed teacher perceptions of program implementation, outcomes, and suggestions for future directions. The results are summarized in Table 3.

Figure 2, **Pre- and Post-HappiGenius Program Scores for Total Difficulties**.

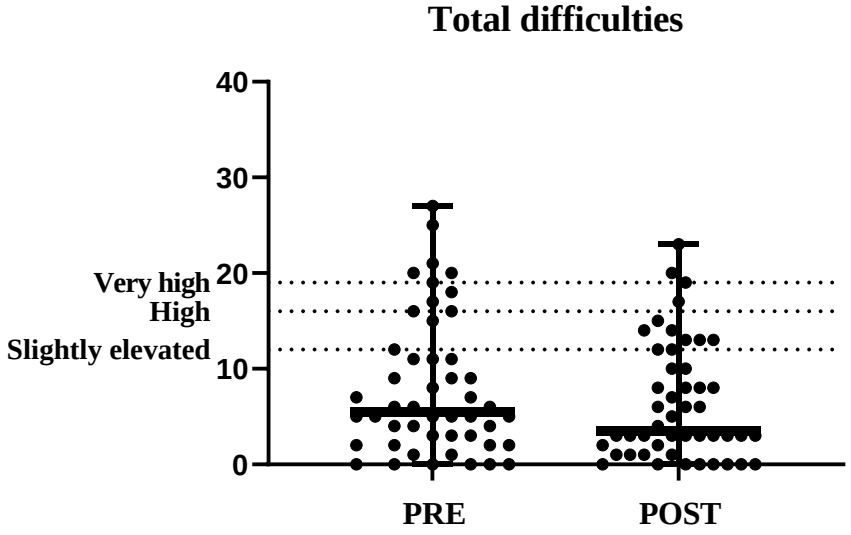


Figure 2, **Pre- and Post-HappiGenius Program Scores for Total Difficulties**. Teacher observations of total difficulties for students in their classrooms decreased from pre- to post-program (for n=48 students, pre-program median (IQR) 6 (2.5, 11.5) vs. post-program 3.5 (1.25, 11.5). Four band categorization system indicates total difficulty scores close to average (0-13), slightly elevated (14-16), high (17-19) and very high (20-40).

Table 2, **Strengths and Difficulties Questionnaire Sub-scales**.

	Pre-program Median (IQR)	Post-program Median (IQR)	p-value	Effect size
Total difficulties	6 (2.5, 11.5)	3.5 (1.25, 11.5)	0.0004*	0.54
Emotional	1 (0, 2)	0 (0, 1)	0.0019*	0.48
Conduct	0 (0, 2.5)	0 (0, 1)	0.05*	0.29
Hyperactivity/ inattention	3 (0, 5.5)	2.5 (0, 4.75)	0.32	0.16
Peer problems	1 (0, 3)	1 (0, 3)	0.02*	0.36
Prosocial behavior	9 (6, 9)	10 (8, 10)	<0.0001*	0.68

Table 2, **Strengths and Difficulties Questionnaire Sub-scales**. The median (interquartile range (IQR)) is given for pre-program and post-program measures. The decrease in pre- to post-program survey measures of student difficulties was significant for the domains of emotional, conduct/ behavioral, and peer problems, but not hyperactivity/ inattention. While the median (IQR) for peer problems appear similar pre- and post-program, the range of scores decreased from (0, 7) pre-program to (0, 6) post-program.

Figure 3, **Changes in Prosocial Scale Score Distribution Pre- and Post-HappiGenius Program**.

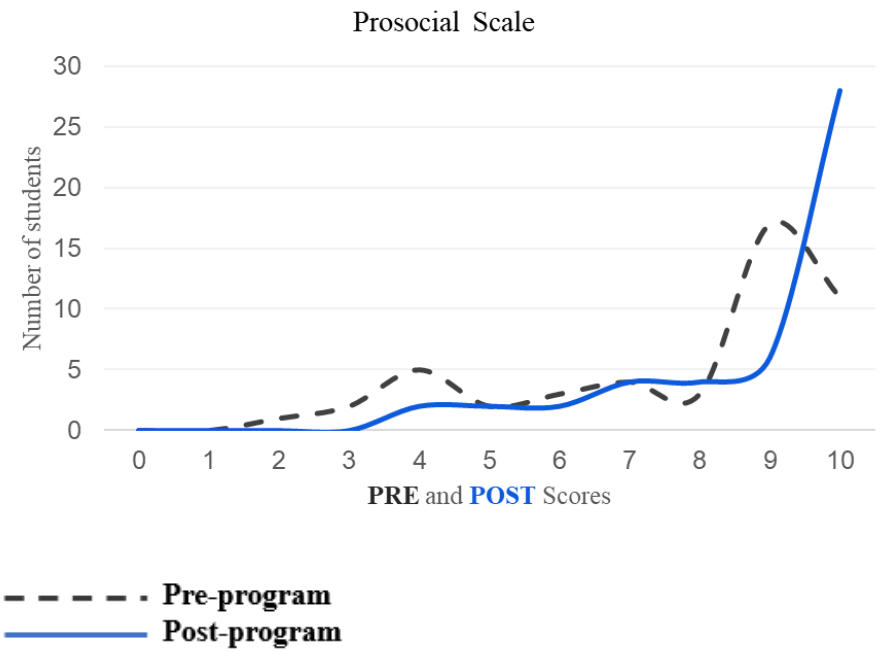


Figure 3, **Changes in Prosocial Scale Score Distribution Pre- and Post-HappiGenius Program**. While teacher rated prosocial strengths were high for students pre-program (median (IQR) 9 (6, 9)), students across the board showed improvement post-program (10 (8, 10), pre- vs. post- program change $p<0.0001$).

Table 3, **Teacher completed program evaluation.**

Program implementation	Program outcomes	Future directions
● Teachers reported "very high" motivation to implement the HappiGenius program (5/5 Likert scale rating). ● Teachers reported the program was practical to implement with the existing curriculum. ● All teachers requested more activities "to get kids out of their seats and moving around" noting "Sometimes [sitting for 45 minutes,] that's hard for third graders to do."	● Overall, the teachers perceived their students to have enjoyed the HappiGenius program. ● The teachers did not perceive any risks to students due to participating in HappiGenius. ● Teachers perceived HappiGenius to be culturally relevant to students. ● Teachers considered HappiGenius a value-add to the Second Step SEL program already in use at the school.	● Teachers would strongly recommend HappiGenius to other 3rd grade teachers (4/4 Likert scale rating). ● Suggested changes included increasing communication in advance of the program, including non-participating classrooms in communications, starting the program earlier in the school year and delivering the program earlier in the day.

Table 3, **Teacher completed program evaluation.** A summary of the quantitative and qualitative results for teachers' program evaluation.

DISCUSSION

Teacher observations endorsed positive behavioral changes taking place in the classroom setting. The teachers observed a significant decrease in total difficulties (SDQ-T) for their classrooms following HappiGenius. In addition to an overall decrease in total difficulties, less students fell in the "high" or "very high" total difficulties categories (scores >16) post-program compared to pre-program. This suggests that the subset of students with the highest total difficulties scores at baseline may have found immediate applications for the skills they learned in HappiGenius, bringing the scores down below "high" or "very high" categories.

POSITIVE EMOTIONS

Teacher observations of their classrooms indicated a significant decrease on the emotional problems subscale of the total difficulties scale. Reducing emotional distress is a key target of HappiGenius and SEL more broadly, though traditionally SEL programs better target externalizing than internalizing problems (Payton, Wardlaw et al. 2000). While teachers and parents tend to emphasize externalizing problems, clinicians report concerns about the increase in internalizing disorders among youth (Perou, Bitsko et al. 2013); ; (Bitsko, Holbrook et al. 2018). There is an increasing focus on mitigating internalizing problems, such as those related to emotional distress. Mindfulness practice in the setting of modern SEL programming has been found to reliably decrease emotional distress in numerous samples using the MindUp curriculum (Schonert-Reichl and Lawlor 2010) (Schonert-Reichl, Oberle et al. 2015). While it is difficult to compare these studies head-to-head because of different metrics used (ie, the Teachers' Rating Scale of Social Competence; emotional control subscale of the Resiliency Inventory; and the Strengths and Difficulties Questionnaire, to name a few), based on the initial quasi-experimental evidence provided in this pilot study, HappiGenius appears to have positive effects in the same direction as similar SEL programming. This pilot study provides initial evidence that the HappiGenius program may add to the field of SEL by expanding upon the available curricula that target internalizing problems.

HappiGenius stands apart from other mindfulness based SEL curricula because of its practice-based approach. For example, mindfulness is practiced at the start of each lesson through breathing exercises, or handling disappointments is practiced by simulating and responding to real-life examples. HappiGenius skill practices most directly related to reducing emotional problems include building gratitude by creating a thankfulness list, paying attention to posture to build self-confidence, and self-management building activities practiced throughout the "Moody Broody" book. Anecdotally, delivery agents observed that the students were willing and

excited to use skills to solve their own problems and apply what they practiced in the classroom to real life situations.

Improvements in emotional distress indicated by teacher ratings correlated with improvements in the student self-report measures for positive affect and self-compassion. The positive affect scale indicated that as a group, students' experiences of positive emotions increased significantly following the program. This could be related to HappiGenius practices including creating a list of specific things that make you happy today, identifying happy feelings, and creating a list to recognize people and pets that care about you. The positive (and negative) affect scale has been commonly used in the literature to understand emotional self-management (Denham 2010). Programs such as MindUp have been found to improve positive affect in student participants, consistent with the findings in this study of HappiGenius (de Carvalho, Pinto et al. 2017) (Schonert-Reichl and Lawlor 2010).

On the other hand, measuring self-compassion in children is a relatively newer than positive affect, with less available studies in the literature. However, in one published study of MindUp among Portuguese students, the self-kindness subscale of the self-compassion scale for children was found to change significantly pre-program to post-program compared to a control group receiving class as usual (de Carvalho, Pinto et al. 2017). In the pilot study of HappiGenius reported here, students showed some of the strongest improvements in self-compassion, with a magnitude of change similar to the MindUp study (average improvement of +0.21 and +0.24 respectively on a 5-point scale). Further study with control group is needed to confirm the significance of the change pre-/ post-HappiGenius, if any. The outcomes of this quasi-experimental study suggest HappiGenius may be unique in providing explicit teaching in self-compassion and ability to significantly improve global self-compassion from baseline.

The pilot data support the assertion that HappiGenius meets the program specific goal of fostering positive emotions for classrooms of student participants. Of note, while the pre-program distribution for positive affect appeared normal, the post-program distribution appeared bimodal with one peak near the pre-program median and a second peak nearly 1 point higher. This distribution pattern suggests that from pre- to post-program, some students in the group improved while others had little to no change. One possible explanation for this discrepancy is differences in student engagement. The HappiGenius program is practice-based and relies on participation of each student. Evidence from social skills programs indicates that engagement and practice (also referred to as dosage) generally promotes positive outcome effects in a linear manner (Charlebois P 2004). The subset of students who stayed near the same level of positive emotions as baseline may not have engaged with the program as much, while the subset who experienced increased positive affect scores participated more in the activities. Further study of student

engagement and uptake of the program material will be important to understanding the program implementation and reach, and in turn identify opportunities to engage as many students within the classroom as possible.

SELF-COMPASSION

Self-compassion increased considerably from baseline for the students in this pilot study. Examples of some activities related to the three dimensions of self-compassion included using kind words, building self-confidence, making a list of those who care about you, a short kindness meditation that addresses common humanity, looking at another person's perspective, and thankfulness activities. Though self-compassion research in younger children is limited, research in adolescents suggests self-compassion is most likely related to the SEL target of reducing emotional distress through its ameliorating effects on depressive and anxiety symptoms (Neff and McGehee 2010, Stolow 2015). This is especially important in the current setting of increasing concerns for internalizing problems among children (Bitsko, Holbrook et al. 2018). Therefore, HappiGenius may represent an important tool in the world of SEL if it can consistently modify emotional distress by teaching skills like self-compassion. Future study of the relationship between self-compassion, emotional distress, depressive and anxiety symptoms in children at baseline and following programming would be helpful to better understanding the role of self-compassion and its utility in maintaining social and emotional wellbeing.

One key finding of this pilot study is that self-compassion seems to be modifiable with the short-term intervention HappiGenius. This is similar to the improvements reported in groups of adults engaging in the Mindful Self Compassion Program (Neff and Germer 2013). Some studies have shown differences in self-compassion scores at baseline based on gender (Yarnell, Stafford et al. 2015), which may be related to socialization. This study was limited in that we did not have demographic information for subgroup analyses. In the future, subgroup analyses by gender and engagement, as discussed above, could be helpful to potentially describe the widening distribution of scores post-program, who benefits most from the program, and opportunities for improving the program reach.

ATTENTION

There were mixed results in the externalizing dimensions of the SDQ-T. There was a significant decrease in the conduct problems subscale of the total difficulties scale, an externally observed behavioral outcome important in evidence-based SEL programming. On the other hand, the decrease in median hyperactivity/ inattention sub-scale scores were not statistically significant. Similar mixed results have been reported in the literature. For example, one study of MindUp has reported positive

improvements in attention with programing (Schonert-Reichl et al., 2015), while another study found no change (de Carvalho, Pinto et al. 2017). This finding was counter to our expectation that attention would improve significantly with HappiGenius programming, but several potential confounding factors could be contributing to the unexpected result. First, the program was delivered at the end of the school year and near the end of the school day, when student attention tends to wane (Godwin, Almeda et al. 2016). Second, using an outside delivery agent could have introduced additional excitement and disruption to the school day routine, as compared to teachers with an existing classroom relationship and strong classroom management background. Third, the program was delivered over 6 weeks as opposed to 12 weeks. Reduced time for skill adaptation could have affected the expected outcomes. Future studies will assess the program delivered as originally designed over 12 weeks, during the beginning or middle of the school year, and with teachers as the primary delivery agents to address these potential limitations.

SELF-AWARENESS

Mindfulness, including the dimensions of attention and awareness, was targeted through program activities including deep breathing exercises at the start of each lesson, attention-building videos with varying kid-friendly themes, and practicing patience. Mindfulness scores increased following HappiGenius, but the increase was not statistically significant. This was especially interesting given the strong improvement observed in self-compassion, of which mindfulness is a key component (Neff 2003). It is possible that the same delivery method drawbacks related to hyperactivity/ inattention affected mindful attentive awareness, since the ability to focus attention is foundational to mindfulness. This includes factors previously discussed like using an outside delivery agent versus a familiar classroom teacher, timing the program at the end of the school year rather than beginning or middle, and delivery over 6 weeks versus 12 weeks to avoid content overload and allow additional time for skill acquisition.

Relevant to both hyperactivity/ inattention and mindfulness measures, we did not exclude students based on developmental or diagnostic differences in attentional abilities, which could have affected the baseline distributions and room for growth. Since we are most interested in understanding the program effectiveness for the classroom as a whole, sorting out students with existing difficulties was not a part of the experimental design. This may be one explanation for the bimodal distribution of MAAS-C scores in the pre- and post-program measures. Students with existing attentional difficulties could account for the lower modes observed in the pre- and post-program survey, though this cannot be confirmed without diagnostic information to perform subgroup analysis. When looking at the bimodal distribution of the pre- and post-program MAAS-C, both the lower and upper modes appear to shift right and move up the scale post-

program. This upward trend provides some encouraging descriptive evidence that positive change could be happening in both groups of students. Improving the sample size to properly power the study may also be helpful to statistically predict if the change from program start to program end is a real result for the larger population of students.

SOCIALITY

Fostering positive social relationships is a primary target of SEL (Skoog-Hoffman 2020). This was most directly measured by the peer problems subscale and prosocial strengths scale of the SDQ-T. During HappiGenius, students were taught relationship skills to deal with real life situations including controlling anger, handling disappointments, and using kind words. The significant reduction in the peer problems subscale of the SDQ-T for the classrooms appears to have much to do with students who had the most peer problems at baseline improving by program end. The improvement observed in these students suggests that practicing skills through HappiGenius could decrease peer problems for students who are most at risk or already demonstrating problematic peer relationships.

Activities that built on prosocial strengths include "Make a Name Tag," where students learn about a partner and introduce them to the class, and "Five Commonalities," where students find five things in common amongst a group of peers. The median prosocial strengths score was already high at baseline, likely due to a pre-existing schoolwide and district-wide focus on social support and community development. Specifically, three traits the school and district explicitly strive to instill in learners include being an ethical contributor (understanding one's self and others), being a skilled communicator (including the ability to adapt based on context), and being an effective collaborator (demonstrates empathy and compassion when working with others). Even so, HappiGenius programming reliably increased prosocial strengths even further for the group of students. This indicates that even in environments where prosocial engagement is already strong, HappiGenius can still offer additional benefit. Prosocial strengths for the lower 25th percentile of students increased following the program as well. This result suggests that HappiGenius facilitated improvements for students across the board, both those already doing well and those who are struggling.

HappiGenius was designed as a primary preventative program that can be used universally across the school for students before problem behaviors develop. Based on the improvements observed in the students that struggled the most with prosocial strengths at baseline, it seems highly possible that HappiGenius can serve and facilitate improvement for students across Tiers 1, 2, and 3 of the Positive Behavioral Interventions and Supports framework (https://www.pbis.org/). This includes Tier 1, proactive support and prevention for students without problem behaviors; Tier 2, providing skills to those students at risk before problem behaviors

develop; and Tier 3, supporting students with problem behavior to improve their behavioral outcomes.

PROGRAM EVALUATION

The teacher completed program evaluations supported the usability of HappiGenius programming in the classroom setting. The teachers that implemented HappiGenius were highly motivated to provide skills to their students who experienced major disruptions to learning in the 2019-2020 and 2020-2021 school years primarily related to COVID-19. Teachers found HappiGenius to be practical to implement alongside the existing curriculum and considered HappiGenius a value-add to the Second Step SEL program already in use at the school. As for teacher observations of their classrooms, they perceived their students to enjoy HappiGenius and thought HappiGenius to be culturally relevant to the students. Teachers' feedback on areas of improvement included some of the future changes previously discussed. For example, teachers suggested the program be delivered earlier in the school year rather than at the end of the school year, and earlier in the school day. They also suggested incorporating more movement breaks throughout the lesson. We hope to address these issues in future iterations by training teachers rather than outside delivery agents to deliver the curriculum, as they can manage their classrooms most appropriately and deliver the lessons at a time that is best for their students' attention and receptivity.

LIMITATIONS

The study included participants from four 3rd grade classrooms in a public elementary school in a midsize city in the midwestern region of the US, which may limit generalizability of the outcomes to other grade levels and settings. Demographic features of participants were not collected, so subgroup analyses are not available to test the equity of the program's reach across genders, racial and ethnic identities. However, the school served one of the most diverse student populations in the district as summarized in the methods. The pilot study was conducted in the style of an effectiveness trial to demonstrate real-world effectiveness rather than an efficacy trial. As such, the student sample was not restricted based on pre-existing conditions that may affect attention, prosociality, or other constructs measured. While this approach is more broadly inclusive and representative of all the diverse student abilities in the classroom, it may affect baseline characteristics and the magnitude of change for the overall sample.

CONCLUSIONS

We presented the results of a pilot study of HappiGenius: an affordable, scalable, accessible, and adaptable SEL program. The results demonstrated an overall improvement of key attributes from pre- to post-program including positive emotions, self-compassion, behavior, and social skills. These positive changes were in the same direction as previous studies of comparable SEL programs. The enhancement of average experiences of positive emotions measured by students' self-report (PANAS-C-PA) and the reduction in emotional difficulties for the classrooms identified by the teacher SDQ reports suggest HappiGenius has potential to meet the Collaborative for Academic, Social, and Emotional Learning (CASEL) standard of reducing emotional distress in youth (Skoog-Hoffman 2020). There were mixed results in the domains of attention and self-awareness for the classrooms studied, areas which other SEL programs that incorporate mindfulness have improved significantly (Schonert-Reichl, Oberle et al. 2015). Given the limitations in study design and small sample size of this pilot, this necessitates further study. We observed a strong and significant improvement in the classrooms self-compassion scores following the program, a unique addition to SEL programming and literature. Altogether, the results indicate the HappiGenius program consistently improves dimensions of both externalizing and internalizing symptoms on average for a sample of children in a classroom setting. The study results indicate that HappiGenius shows promise as a novel SEL intervention for student wellbeing and observed behaviors in the classroom.

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