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The Efficacy of Brainspotting and Sand Therapy to Reduce Anxiety Symptoms in Children Aged 8-9

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Abstract

This study explored the use of Brainspotting (BSP) in combination with Sand Therapy (ST) for use with 8–to 9-year-old children with anxiety symptoms in a school-based setting. Using the Spence Children's Anxiety Scales (SCAS), The Behavior and Feelings Survey (BFS), and the Top Problems Assessment (TPA), the research project measured anxiety as reported by parents/caregivers and students, internalizing, externalizing, and total concerns as reported by parents/caregivers, teachers, and students, and finally individually identified unique concerns as reported by parents/caregivers, teachers, and students. The researcher collected data from student participants (11) who experienced six sessions of BSP and ST. The quantitative data collected identified project signifiers for future researchers. Outcomes reflected statistical significance of a reduction in anxiety scores for parents in the subscale of generalized anxiety and a significant reduction of scores in children in the subscales of generalized anxiety and separation anxiety. Parents and teachers indicated significantly lower scores in internalizing and total concerns identified across time intervals. All three groups of reporters indicated a significant reduction of top problems identified across time intervals. Outcomes demonstrate the promise of the integrated practice of BSP and ST while laying a framework for future research of this method.

Keywords: Brainspotting, sand therapy, children's anxiety, school-based intervention

Anxiety extends throughout various facets of life: test anxiety, the yips in sports performance, stage fright, or even school refusal. Results are similar: children burdened with anxiety may, in turn, avoid life-giving events that strengthen skills through the expansion of resilient neural learning undergirding future stress management (Knudsen, 2004; Mah & Ford-

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Declaration: Author states that there is no conflict of interest.



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Jones, 2012). When there is a need for resilience and mastery, anxiety may rob our youth of sustaining internal qualities that allow them to build character through managing ordinary distress of life experiences (Ginsburg & Jablow, 2015; Hancock, 2021; Masten & Barnes, 2018).

The United States Centers for Disease Control and Prevention (CDC) has indicated that Mental Health is a crisis for our young people. Data suggests that one in five children has a mental health diagnosis and that only 20% of those children have access to appropriate mental health resources (CDC, 2022). CDC data demonstrates that 9.4% diagnosed within ages 3-17 years (approximately 5.8 million) were diagnosed with anxiety in 2016-2019. While the data slightly differs, a 2022 review by Mangione et al. in JAMA using data from the National Survey on Children's Health from 2016-2020 notes that during 2016-2019, there was an increase in anxiety reported, and by 2020, 5.6 million youth had been diagnosed with anxiety problems (Lebrun-Harris et al., 2022). The highest prevalence of reported diagnostic categories included 9.8% Attention Deficit Hyperactivity Disorder ADHD Diagnosis and 9.4% Anxiety Diagnosis (CDC, 2022).

The American Psychological Association (2022) also reported an uptick in diagnoses of behavior or conduct problems from 2019 to 2020 (about 5 million children in 2020), which aligned with parent reports that children have been "acting out" more since the start of the pandemic. These externalizing behaviors may reflect the anxieties of children. Of significance is the concept that anxiety disorders in children are associated with future experiences of clinical anxiety and depression (Beesdo et al., 2009).

While children adapt and grow in conditions of optimal stress, learning opportunities, and novel experiences, the presence of significant traumatic experiences (such as COVID-19 and school shooting violence) can interfere with learning, thereby creating a system of dysregulation and over-response in the brain. Increased stress can culminate in delayed or inhibited development of cortical planning and organization inherent in executive function (CDC, 2022; Palix Foundation, 2013).

During 2020 and the lockdowns of COVID-19, children and adults alike experienced universal anxiety. The sudden fear and isolation amplified the needs of children who may have already had anxiety needs. Le Brun-Harris et al. (2022) published results in JAMA that found no significant increase in receipt of mental health treatment or counseling from 2016 to 2020. As of 2020, only 80% of children who needed mental health care received any services (AHRQ, 2022). The study also found a steady decline over the past five years in parent or caregiver well-being (as reflected by self-reports about mental and emotional health and coping with parenting demands) and an increase in the proportion of children who ever lived with someone with mental health problems (Lebrun-Harris et al., 2022). Providing mental health services during the school day is an approach to supporting youth who have barriers to access, including caregiver stress and/or mental health needs (AIR, 2022; Diehl, 2019; Youth First, 2023).



Anxiety and School Performance Treatment of Anxiety in Youth

Anxiety and associated behavioral concerns create barriers for children in achievement, compounding challenges with mastery in a host of skills necessary for incremental development beyond elementary school years. The skills that may lag include executive functioning, the ability to delay gratification, integration of viewpoints, perspective-taking, and sequential thinking (Olson, 2014). Children with anxiety symptoms may struggle in both social-emotional learning and academic learning when a school considers the child's needs (AIR, 2010, 2022).

Observed student concerns include an increase in anxieties and worries that detract from learning, intense dysregulation emotions displayed in outbursts or meltdowns, increased frequency of somatic complaints, difficulty separating from parent/caregiver, overresponse to disappointment or competition in learning games (Richter et al., 2022). A combination of these factors can interrupt learning when they occur frequently and require teacher/adult caregiver intervention (Olson, 2014; Shanker, 2016).

Evidence-based practice is designated by the American Psychological Association (APA) and the Center for the Prevention of Substance Abuse and Mental Health Services (APA, 2021; SAMHSA, 2024). The most prevalent and preferred method for anxiety in youth is Cognitive Behavioral Therapy (CBT) with or without medication (Community Prevention Services, 2019; Mangione et al., 2022). Evidence-based methodology to address anxiety includes cognitive behavioral approaches as well as skill-based psychoeducation methods.

Cognitive Behavioral Treatment of Childhood Anxiety

Studies show that CBT is successful in 60-70% of children (Dowell et al., 2018). Dowell et al. describe various approaches to increasing efficacy outcomes with youth. In contrast, others report that CBT focuses specifically on behavior change with younger children and less on self-regulatory processes (Minde et al., 2010).

Chorpita et al. (2011) reported that the most efficacious intervention methods include CBT. However, Warwick et al. (2016) conclude that not all children respond to CBT, and additional children who experience relief with CBT are not maintained over time. Whiteside et al. 2020 concluded that CBT is most effective when there is consistent monitoring and use of exposure in the therapy utilized (Whiteside et al., 2020).

The most prevalent and preferred intervention method for anxiety in youth is CBT with or without medication (Dowell et al., 2018; Mangione et al., 2022). Evidence-based methodology to address anxiety includes cognitive behavioral approaches as well as skill-based psychoeducation methods.

Chorpita et al. (2011) reported that the most efficacious methods include CBT, exposure, modeling, education, CBT plus education, and CBT plus medication. Less effective methods



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included CBT with parents, relaxation, assertiveness training, CBT for children and parents, family psychoeducation, and hypnosis. Warwick et al. (2016) concluded that not all children respond to CBT, and additional children experience relief with CBT that is not maintained over time.

Pharmacologic Treatment of Childhood Anxiety

Selective serotonin reuptake inhibitors (SSRIs) have been shown to be effective in children and adolescents (Patel et al., 2018). However, the multi-modal approach of integrated therapies has demonstrated the best support. While several medications are used to treat childhood anxiety, there is a need for careful monitoring of safety and risk assessment with pediatric clientele (Henry et al., 2012).

Sand Therapy Treatment of Childhood Anxiety

Sand therapy (ST) is a therapy modality utilizing small and large figures that can be arranged within a tray with sand. The use of sand allows clients the freedom of emotional expression through a unique medium of symbolic play, silent expression through movement of the sand, and healing through the connected presence of the trained clinician. The term "Sand Therapy" has been designated to describe the inclusive practice of all sand therapists regardless of theoretical approach. The therapist engages in an attuned presence of witnessing and providing interaction about the sand therapy work itself. The depth and complexity of the approach demand high levels of training and supervision in clinical practice (Homeyer & Lyles, 2022).

There are a variety of theoretical approaches to sand therapy. *Sandplay Therapy*, developed by Dora Kalff, is a distinctive Jungian model involving specific sand tray dimensional properties, the provision of both wet and dry sand, and the therapeutic stance whereby the therapist may interpret processes silently but not verbally (Kalff, 2003). Furthermore, clients explore the collective unconscious and archetypes of the symbols within the therapy context (Cunningham, 2023/2007).

The term *Sandtray Therapy* describes additional models of sand therapy practice that are non-Kalffian. Among sandtray approaches are those rooted in Adlerian, Gestalt, and Humanistic theoretical underpinnings (Homeyer & Sweeney, 2017, 2023). Homeyer and Lyles (2022) discuss the importance of theory serving as a guide to the procedures held within sand therapy sessions, which may include varying types of sand, shapes of sandtrays, verbal and non-verbal prompts, and the use of interpretation within the sessions. (Homeyer & Lyles, 2022).

Several researchers have studied sand therapy (ST) as an intervention for children with various behavioral concerns (Holliman & Foster, 2023; Lee et al., 2018; Roesler, 2019). Holliman and Foster (2023) conducted a meta-analysis of thirty-six studies that included sandtray and



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sandplay, yielding a large effect size of Hedges' g of 1.165. (When using the Hedges' g , scores of .5 or greater denote a medium effect, and scores of .8 or higher denote a large effect). Anxiety was among specific concerns that showed a large effect size ($g = 1.425$) (Holliman & Foster, 2023).

Roesler (2019) conducted a meta-analysis of Sandplay therapy using randomized controlled studies, concluding that the "current evidence highlights a range of potential benefits of practice" (Roesler, 2019, p. 84). Roesler included eleven studies that included youth mental health concerns with positive outcomes. Among the concerns measured were children with externalizing behavior problems and children with anxiety disorders (Roesler, 2019, p. 89).

Brainspotting

This author uses the terminology *healing practice of treatment* in this article with the understanding that Brainspotting (BSP) encompasses the entity of a brain/body mechanism guiding self-healing within the subcortical region of the brain. BSP emphasizes a neuro-experiential model, according to the description of its 2003 landmark developer, David Grand (Grand, 2021). The bottom-up method is open and expansive to the individual's experience. BSP assists clients within the context of dual attunement: attention is focused on the therapeutic alliance and a physiological attunement to the client's somatic response system (Corrigan et al., 2015; Corrigan & Grand, 2013; Grand, 2013). Through the co-regulation of the practitioner with the client, Brainspotting activates brain/body resources, marshaling nervous system responses from dysregulation to regulation through the precise location of brainspots in the visual field (del Monte, 2021; Grand, 2003).

Anxiety and School Performance

School performance is relevant to this study due to many environmental factors impacting children's mental health since 2020. These factors include the COVID-19 virus (Amin & Parveen, 2022; Fegret, 2020;) and the announcement of a national emergency in child and adolescent mental health (AAP, 2021), both of which were investigated in the research as sources of collective anxiety impacting the students. Disruptions in sensitive growth periods may cause delays and hamper skill development inherent in childhood (AAP, 2024; Knudsen, 2004).

Continuous skill development occurs through traditional learning channels, including teaching, practicing, modeling, and experimentation (Olson, 2014; Palix Foundation, 2013). A child who experiences too much autonomic arousal through anxiety responses is poorly situated for requisite developmental gains (Hoofman, 2021; Riehm et al., 2021). Bruce Perry notes that for children to learn, they must feel a sense of safety and comfort (Mullane, 2021). In his Polyvagal theory, Porges suggests the importance of neurobiological processes that support emotional regulation occurring in the context of positive relational dynamics. When children feel



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safe in the context of learning and home environments, their brains are set for the best learning (Porges, 2022). Shanker echoes the discourse of both Porges and Perry, emphasizing the interaction—i.e., the experience of stress, distress, and energy exchanges between parents and children (Shanker, 2016).

Sand Therapy and Brainspotting Research Foundations

Lowenfeld, the developer of sand therapy, sought to create a way to understand children's thinking processes better (Lowenfeld, 2008). She worked with children and their mothers following World War I, which impacted her thinking about trauma and resiliency (Mitchell & Friedman, 1994). She brought small figures to engage with her child patients and noticed that children put the toys into the sandbox to create their imaginary worlds. In the *World Technique*, the children are given a direction to "place a world in the tray" (Turner, 2017, p. 2). As Turner (2017, p. 2) notes, "It is not an exaggeration to say that it was the children who invented Sandplay."

Sand therapy meta-analytic research has demonstrated statistically significant large effect (Hedges $g < .8$) outcomes with various clinical treatment needs across adult and youth populations and within varying clinical settings. Large effect sizes signify the statistical significance of outcomes related to the efficacy of the interventions of sand therapy with a wide array of clinical concerns (Holliman & Foster, 2023; Koh & Ha, 2022; Wiersma et al., 2022). Specifically, Jungian Sandplay is an evidence-based treatment (Freedle, 2022).

Brainspotting continues to gather research evidence but has studies that support the use of Brainspotting with both generalized anxiety and post-traumatic stress disorder (Anderegg, 2015; Hildebrand et al., 2017; Horton et al., 2024). Anderegg describes the use of BSP with adults seeking treatment for Generalized Anxiety Disorder, demonstrating that BSP and EMDR groups had similar results in that patients reported lower scores on anxiety, which were sustained over time, while the CBT group showed a reduction of symptoms, but less sustaining effect over time.

Hildebrand et al. (2017) similarly studied the impact of BSP with an adult cohort to address post-traumatic stress disorder (PTSD). A sample of seventy-six adults received intervention of either BSP or EMDR for three clinical sessions. Outcomes signified that BSP is a promising approach for PTSD (Hildebrand et al., 2017). Horton et al. (2024) studied the impact of BSP to address PTSD in comparison to treatment as usual (TAU). Results demonstrated that initial post-treatment outcomes favored the TAU approach, while BSP showed more positive findings at the follow-up stage (Horton et al., 2024).

D'Antoni et al. (2022) found a positive impact of using BSP to reduce distressing memories. Masson and researchers describe a victim's recovery following a mass shooting



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case study with a 6-year-old child using BSP. In the aftermath of a school shooting tragedy, BSP was employed by clinicians at Sandy Hook Elementary School, denoting the approach as most preferred over other interventions utilized for adults and one of the top interventions helpful to children (Sandy Hook Community Foundation, 2016).

Methodology

Participants

An elementary school in the Midwest of the United States (grades K-5) partnered with this researcher. Inclusion criteria for participants were students aged eight and nine years of age who demonstrated anxiety symptoms identified by teachers or parents; the students were not participating in outpatient therapy for anxiety or other mental health symptoms and did not take psychotropic medication for anxiety or depression concerns.

The partner school staff provided student referrals, which resulted in a convenience sample. This researcher conducted a literature review to assess the necessary numerical size of the research subjects. In Roesler's 2019 meta-analysis of sandplay, nine of the seventeen effectiveness studies employed a sample size of fewer than twenty participants. In the Wiersma et al. (2022) meta-analysis of Sandplay, the studies of children in school settings, sample sizes ranged from eight to thirty-two participants. With a school population of 532 and approximately 178 second and third-graders, the sample size 12 captured 6.7% of the children within the age-inclusive group, representing 71% of the potential margin for anxiety-impacted youth. (CDC, 2022 data note that 9.4% of children are diagnosed with anxiety).

This research project used a mixed methods design with repeated measures. Thus, the researcher proposed a smaller sample size of twelve students, matching the school population demographics. A large volume of qualitative data was collected using Brainspotting with Sand Therapy. The qualitative data collection involved detailed documentation of various aspects of the healing practice within the intervention sessions and will be reported elsewhere.

Potential subjects were children who were referred for assistance by the school counselor and screened for anxiety symptoms. The school counselor convened with parents to discuss the research project. The school counselor referred interested parents to the researcher for additional information and informed consent discussion, resulting in twelve student subjects, six girls and six boys. Two students were of mixed race; one was African American, and nine were Caucasian. One student was receiving special education services. These demographics represented a cross-section of the school population, which was a goal of the study. One student transferred out of the school during the research project, leaving eleven students who completed the study.



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The initial data collection phase was 3 weeks as each child completed pre-test data at three data points. The participants then received six weekly intervention sessions. Sessions were 20-25 minutes long and held during the school day at agreeable times designated by the school counselor and parents. The research room contained a consistent, static collection of figures on an open table. The sand tray was partially filled with standard brown sand on a separate table; no wet tray was used during the intervention phase.

Following the third intervention session, the students, parents/caregivers, and teachers participated in the completion of the BFS and TPA for midpoint data collection. After the final three intervention sessions, the same data was collected from all three groups using all of the measures.

After the final session, parents completed a second semi-structured interview to discuss their impressions of their children's anxiety symptoms, progress, and further needs. Five families requested and were provided with a mental health referral following the study. Nine of the eleven parents (81.8%) verbalized improvement in behavior or attitudes with their children from the beginning of the study to the end of the interventions.

With parent consent, the researcher offered all participants one follow-up session beyond the data collection period. At the 45-day conclusion, the researcher sent parents and teachers a satisfaction survey to comment on their experience in the study. No participant (children, teachers, or parents) received financial compensation from the researcher or school.

Measures

The researcher used three instruments for data collection: The Harvard Behavior and Feelings Survey (BFS; Weisz et al., 2019), The Harvard Top Problems Assessment (TPA; Herren et al., 2018; Weisz et al., 2011), and Spence Children's Anxiety Scales (SCAS; Spence, 2021). All three instruments selected are valid and reliable for children aged eight and older and adults who observe their needs most frequently (parents/caregivers and teachers). Weisz et al. (2019) found the BFS to be a robust and reliable measure with internal consistency for tracking change over time in youth ages 7-15 within three variables: internalizing, externalizing, and total problems. The TPA exhibited test-retest reliability and internal consistency for measuring sensitivity to change across time periods (Weisz et al., 2011). Spence (1998) reports that the SCAS is a reliable measure to detect anxiety by comparing a large community sample with a clinical sample of youth ages 8-12.

The Behavior and Feelings Survey (BFS; Weisz et al., 2019) is a 12-item rating scale that both youth and their caregivers can complete. It has three scale scores: Internalizing Problems, Externalizing Problems, and Total Problems. Items are rated on a scale of intensity from 0 (not a problem) to 4 (A very big problem). An example of an item on the BFS is "I worry about bad things happening."



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The BFS demonstrated reliability and validity with other instruments, including the Achenbach Child Behavior Checklist (CBCL; Achenbach, 1966) and the Youth Self Report (Achenbach & Rescorla, 2001), both well-standardized measures (Weisz et al., 2019).

The Top Problems Assessment (TPA) is used to identify priority concerns from the reporter's (youth or caregiver) perspective. Items are rated on an intensity scale from 0 (not a problem) to 4 (a very big problem). Youth and caregivers identify one to three specific areas of concern. An example of a top problem from a caregiver is "He has frequent emotional meltdowns." The TPA measures observable behaviors or patterns unique to the reporter's perspective, and the same concerns are reviewed at each time interval. The researcher was careful at the beginning of the study to determine the most appropriate "problem(s)" for observation.

The SCAS measure is a 44-item scale for children who are at risk of developing anxiety. Responses are a 4-point Likert Scale of frequency ranging from 0 (never), 1 (sometimes), 2 (often) and 3 (always). An example of an item is "I worry about things." The parent SCAS is a 38-item scale with 0 (never) to 3 (always) ratings. An example of an item from the parent scale is "My child worries about things." For both parent and student, the approximate completion time is 10 minutes.

Susan Spence of Australia developed the Spence Children's Anxiety Scales (SCAS) in 1998. A review of the SCAS has found it to be a reliable and valid instrument for measurement (Essau et al., 2002; Orgilés et al., 2016). Used in both school and clinical settings spanning the globe, the SCAS has translations into more than twenty languages (Reardon et al., 2018). The SCAS measures six aspects of anxiety, including obsessive-compulsive disorder, social phobia, panic disorder/agoraphobia, separation anxiety, fear of physical injury, and generalized anxiety. Normative data recorded by Spence separates ages and genders. The SCAS provides a total SCAS score, T-scores, and percentile for each scale score. Children who score one standard deviation above the mean are at higher risk for anxiety diagnosis (Reardon et al., 2018; Spence, 2021).

Procedure

The researcher submitted the research proposal to the partner school administration, which agreed to participate once the IRB was approved and a background check of the researcher (who provided the intervention). The researcher submitted the research proposal to the university IRB. The IRB committee approved the project with the agreement that any students who participated in the study could be referred for mental health counseling should needs arise as identified by the school or the parents. Protections for minor children included providing follow-up sessions if requested at the school, debriefing with the school counselor to support the child, and providing ongoing opportunities for parent and/or teacher communication with the researcher. Parents signed the informed consent forms, and students gave their assent to participate in the study. All parties were informed that they could leave the study at any time.



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The researcher used a repeated measures design across time intervals. The researcher did not have a control group but used a within-subjects comparison to observe change over time as the intervention was employed.

The researcher collected quantitative data using the BFS and TPA at 6 points during the study from the caregiver/parent and the student. The data collection points were before the initial intervention, again at the midpoint, at the end of the study, and 45 days post-intervention. BFS and TPA teacher data were collected at four points (rather than six data points collected with students and parents): one week before intervention, midpoint, completion, and 45 days post-intervention. (Reduced number of data points was requested by the school partner). SCAS caregiver and student data were collected at pre and post-intervention periods.

The researcher collected qualitative data throughout the study through semi-structured interviews before initial quantitative data collection from parents and at the end of the intervention phase of the study. Parents responded to questions about the impact of collective anxiety (related to COVID-19 and school shooting violence) on their children and families. The researcher administered satisfaction surveys to parents and teachers during the 45-day follow-up period. The researcher collected BSP and ST intervention process data, including themes observed, figures selected, comments made about the trays, and BSP observations. Additional data was gathered to reflect the quality of attunement experienced with the researcher during the intervention sessions.

The researcher entered the data, as it was collected, into spreadsheets for analysis at the end of the study. The study lasted one school semester, beginning in January and ending in May. The researcher selected the Wilcoxon Signed Rank Test to evaluate the SCAS data. The Wilcoxon Signed Rank Test is a nonparametric rank test appropriate for using two matched samples. Nonparametric tests are appropriate measures for a non-normative small sample and for use in descriptive statistics. The ranks of pre and post-measures for the six scales of the SCAS for both parent and student pairs provide an analysis of anxiety reduction. The rankings yield a 2-tailed Z score. The Z score provides a numerical representation of the probability of change from pre to post-measure.

The researcher used the Analysis of Variance (ANOVA) statistical test to examine the repeated measures of mixed pairs and an ANOVA of T Scores to analyze the BFS and the TPA. Each subject provided multiple data points, and the means of the cohort of respondents were examined across time intervals. In this study, the independent variable is time, and the dependent variable is the report of BFS and the TPA change as time elapses through the provided research sessions. The F-statistic from a repeated measures ANOVA is:

$$F(df_{\text{time}}, df_{\text{error}}) = F\text{-value}, p = p\text{-value}$$

Where there is a $p < .05$, the null hypothesis is rejected, and the alternative hypothesis can be accepted.



Results

This mixed methods research project explored five research questions through qualitative and quantitative analysis. The quantitative analysis, reported here, focused on Q4: What outcome effects are observed by students, teachers, and parents in using an integrated approach of BSP and ST to assist children aged 8-9 who exhibit anxiety symptoms? The related Hypothesis 4: The short-term intervention of BSP and ST will cause a reduction of symptoms of anxiety and increase observed emotional regulation or behavioral mastery as reported by either parents, teachers or students using a repeated measures design.

Description of Behavior and Feelings Scale (BFS) Scores

Table 1 shows the significantly lower F scores for internalizing scores and total problem scores across time from the parent perspective (n=8). ANOVA Parent BFS Internalizing $F_{1, 159.593}=11.429$, $*p<.05$. ANOVA Parent BFS total problems $F_{1, 496.341}= 10.155$, $*p<.05$.

Table 1

BDS Parent/Caregiver Mean Scores

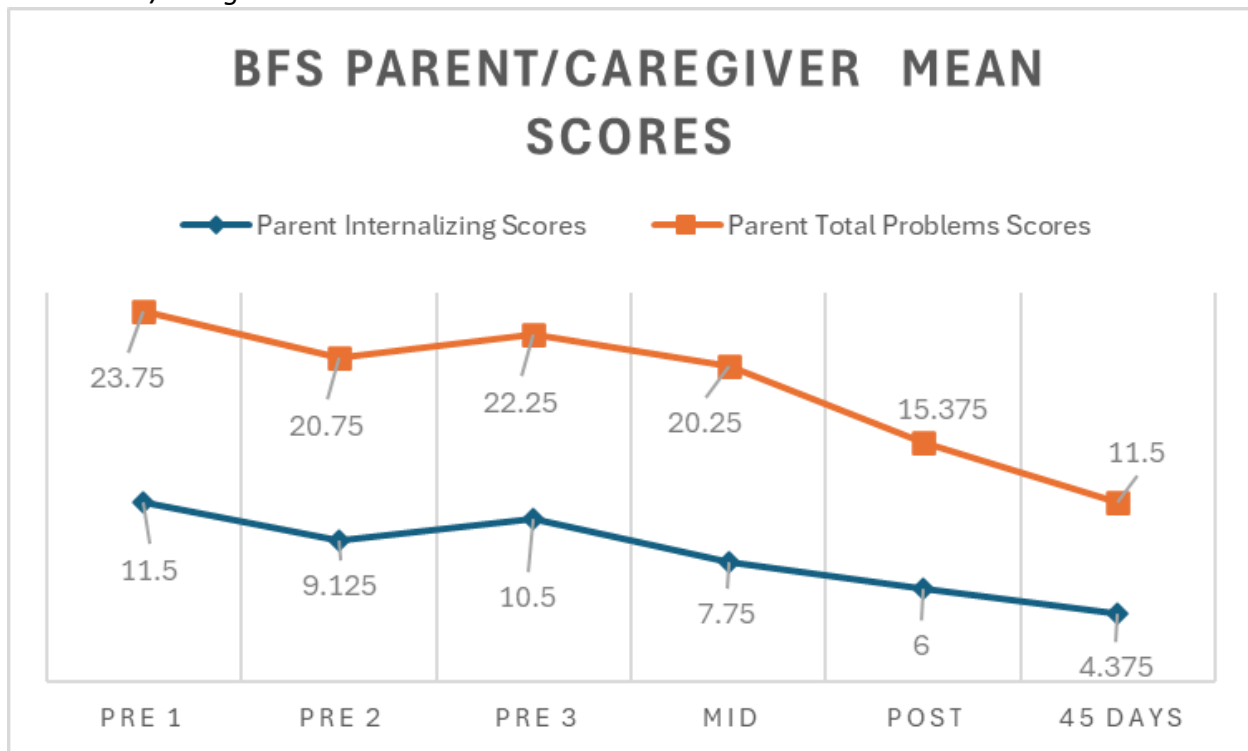
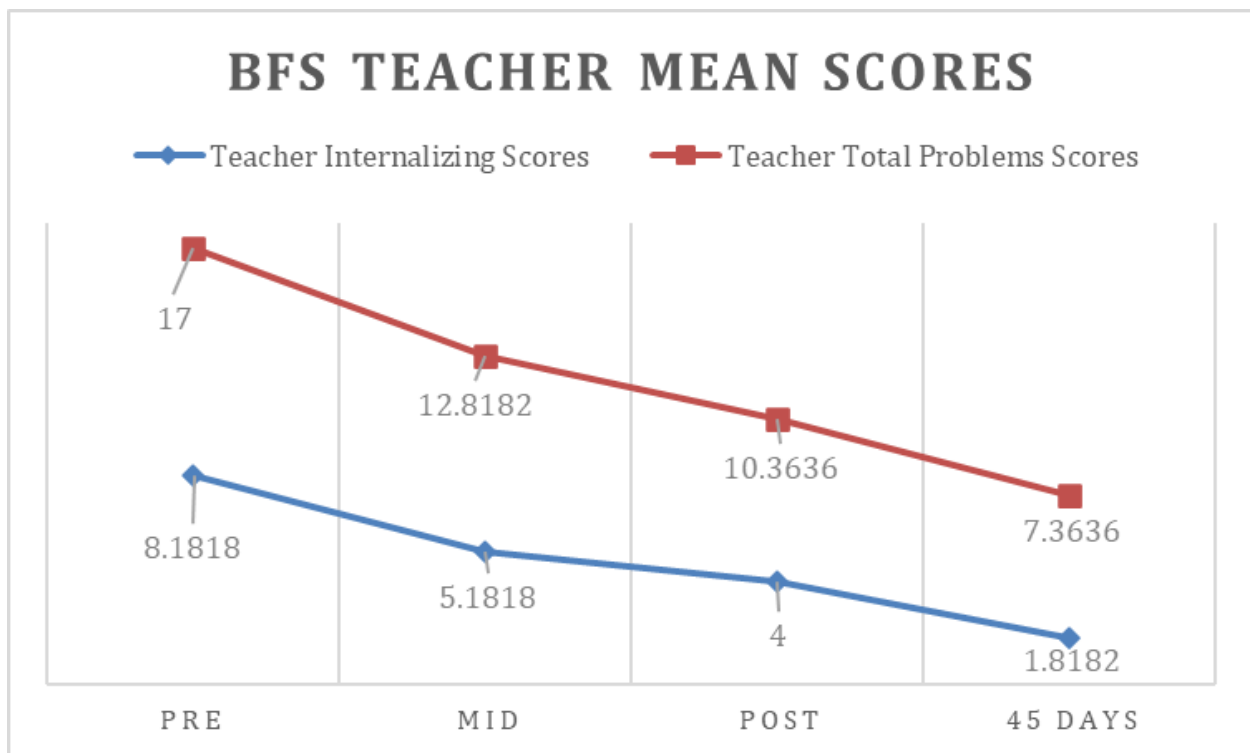




Table 2 shows the teacher's perspective of significantly lower F Scores for internalizing scores and total problems scores across time. (n=11). ANOVA for Teacher BFS Internalizing: $F(1, 102.909) = 21.965$; $**p < .001$. ANOVA for Teacher BFS total problems: $F(1, 415.327) = 13.026$; $**p < .01$.

Table 2
BFS Teacher Mean Scores



The changes noted are in the internalizing behavior and the total problem scores. Internalizing problems are described as worrisomeness, shutting down, easily discouraged, and emotional withdrawal. These concerns may be associated with children who demonstrate fewer behavioral demands but may struggle academically due to lack of concentration, poor tenacity, or failure to ask for assistance in class. Parents may experience the internalizing child as one who shuts down, will not talk about problems, or is sad and disengaged.



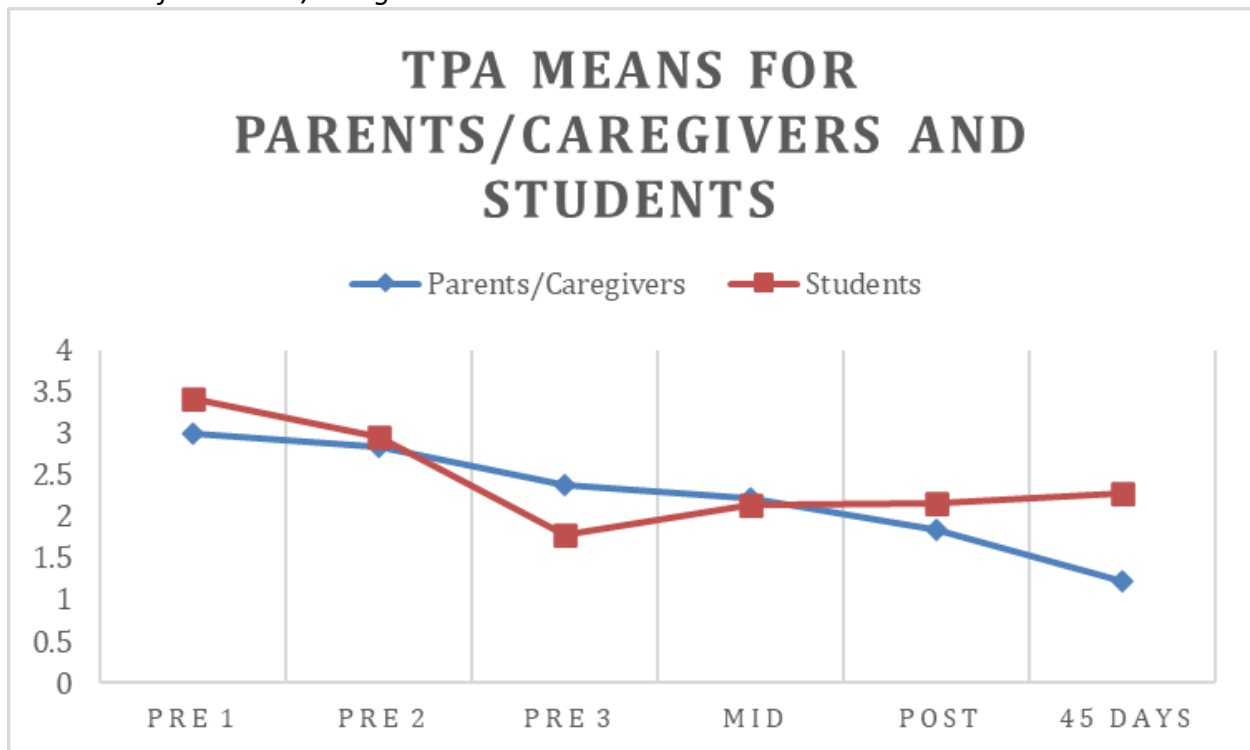
Description of *Harvard Top Problems Assessment (TPA) Outcomes*

TPA outcomes of note:

Analysis showed a statistically significant change in means when using the F statistic ANOVA for all three reporting groups. Table 3 shows the parent TPA data, which has significantly lower means across time intervals (n=6). ANOVA $F_{1, 3.14} = 24.614$; $*p < .01$. Student reports demonstrated significantly lower means across time intervals (n=9). ANOVA $F_{1, 6.759} = 8.945$; $*p < .05$. Table 4 show the same data as reported by teachers.

Table 3

TPA Means for Parents/Caregivers and Students

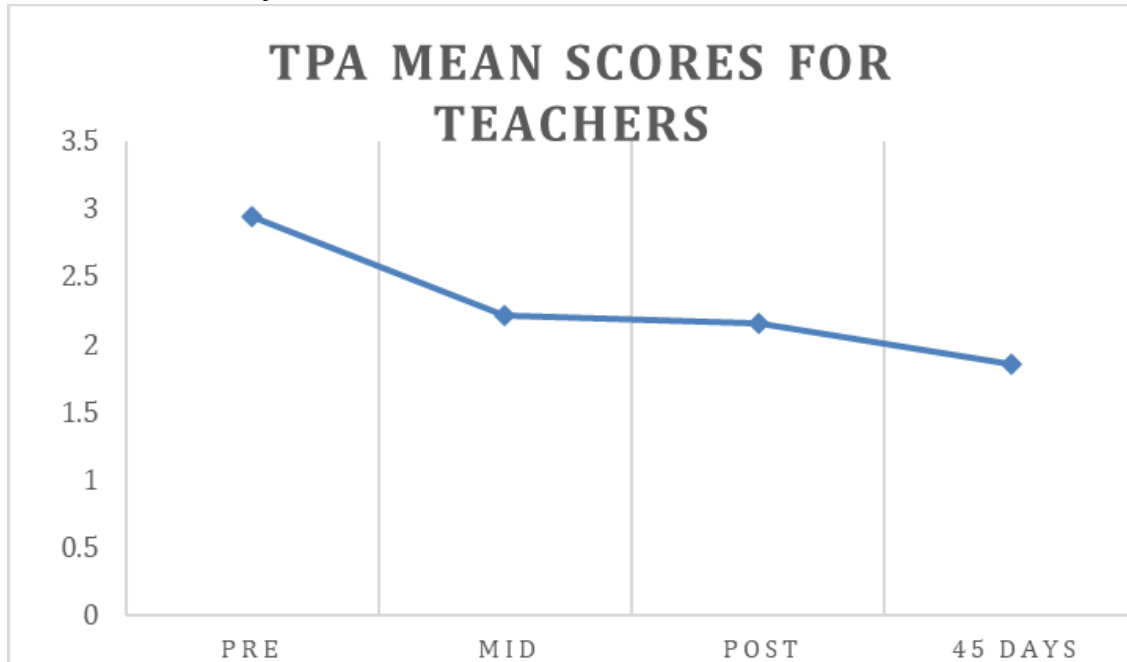


- Teacher reports demonstrated significantly lower means across time intervals.
 - ANOVA $F_{1, 6.156} = 9.182$; $*p < .05$



Table 4

TPA Means Score4s for Teachers



Statistical significance in the small sample size demonstrates the likelihood that the BSP and ST intervention had a positive impact over time. Top problems identified by each reporter provided a rich array of descriptive notations.

Spence Children's Anxiety Scales (SCAS) Data

The ranks of pre and post-measures for the six scales of the SCAS for both parent and student pairs provide an analysis of anxiety reduction. The rankings yield a 2-tailed Z score. The Z score provides a numerical representation of the probability of change from pre to post-measure. Statistical analysis assigned statistical significance in two of the six scales that are part of the SCAS. Table 5 details test statistics from the Separation Anxiety and Generalized Anxiety scales of the SCAS.



Table 5

Test Statistics Regarding Separation Anxiety and Generalized Anxiety

Participant Type		Separation Anxiety T- POST to Separation Anxiety T- PRE	Generalized Anxiety T-POST to Generalized Anxiety_T- PRE	Total SCAS T-POST to Total SCAS T- PRE
Parent	Z	-.773 ^b	-2.312 ^c	-1.585 ^c
	Asymp. Sig (2-tailed)	.439	.021	.113
Student	Z	-2.201 ^c	-2.388 ^c	-1.483 ^c
	Asymp. Sig (2-tailed)	.028	.017	.138

a. Wilcoxon Signed Ranks Test; b. Based on negative ranks; c. Based on positive ranks

Student outcomes

A Wilcoxon Sign-Rank Test indicated that median post-test ranks for separation anxiety with children were statistically significantly lower than pre-test ($Z = -2.201$, $*p < .05$). A Wilcoxon Sign-Rank Test indicated that median post-test ranks for generalized anxiety were statistically significantly lower for children than the pre-test ranks ($Z = -2.388$, $*p < .05$). Elevated scores were at the 84thtile at the pre-test data recording or one standard deviation above normal limits of T scores for the SCAS. Other scales of the SCAS demonstrated no change to report for students.

Parent outcomes

A Wilcoxon Sign Rank Test indicated that median post-test ranks for generalized anxiety were statistically significantly lower than the pre-test ranks ($Z = -2.312$, $*p < .05$). Elevated scores were at the 84thtile at the pre-test data recording or one standard deviation above normal limits of T Scores for the SCAS. Other scales of the SCAS demonstrated no change.

Case Illustration: Autumn

A fundamental tenet of Brainspotting is the uncertainty principle, which maintains that there are no assumptions about how a session will play out. The approach is to follow the client, allowing the client to lead the process of therapy work (Grand, 2013). This concept of "following the tail of the comet" is discussed by Grand (2013) and Baumann (2020), and it corresponds to



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providing an open structure during the research sessions. Brainspotting offers an intentional space of free engagement where the brain can effectively self-heal. With children, the premise of allowing them to lead is much the same, though the clinician may opt to prepare materials that enhance the facility to find brainspots and then follow the child's focus (Jacobi & Baumann, 2020). In each session, the researcher made efforts to collect SUDs data at the beginning and end of Brainspotting as taught in Phase One BSP training (Grand, 2003; Kiyimba & O'Reilly, 2020).

ST has the premise of allowing the child to enjoy the apparatus, place items in the sand, and create a display that reflects their internal landscape or current thoughts and feelings. To this end, finding a best-fit procedure that does not undermine the theoretical underpinnings of BSP or ST was critical to research efforts. The researcher used the Lowenfeld World Technique as a point of departure for the intervention sessions (The Lowenfeld Trust, 2024). The delivery model was open-ended, as in most Brainspotting sessions, and it also captured a framework that provides a similar methodology from session to session.

The intervention process was derived from underpinnings in Adlerian Sand tray play therapy training (Kottman, 2023), writings of Homeyer and Sweeney (2017, 2023), and through training and consultation with Monica Baumann (Jacobi & Baumann, 2020).

Case Study: Autumn

A note: The process described here represents one of the children who participated in the study. Her parents provided written consent for her story to be included with appropriate changes to protect confidentiality.

Children showed up in a variety of ways to the research room. Autumn (not her real name) was one student who seemed to experience enormous joy when it was her turn. She grinned from ear to ear and ran down the hall well ahead of me to tag the door.

Autumn had developed separation anxiety that her caregiver described as "intense clinginess." Especially in the evening, she had to be right by her mom, wanted her mom to do her homework, and refused to comply with simple tasks that took her to other rooms in the house. This could escalate to dramatic fits. COVID had impacted her joy in learning, as reported by both parent and child. She is petite, and her eyes have dark circles on some days. She might hide under her hair or put her head down and say she's tired.

Academically, she struggles daily. "I'm not good at reading." "I'm not good at math." Her lack of tenacity concerns her classroom teacher. She gives up too easily and asks for help on items she knows how to do. All are concerned about upcoming standardized testing. Will she just give up?

This student was eager to please in research sessions. She created stories in the sand as if we had hours for epic sagas. Her stories were detailed and rhythmic. As if to help the researcher know she had completed the effort, she would place the images in a tableau. When it was time



to photograph the scene, she wanted to make sure the sand was tidy, and she set up the scene to be "photo ready." In each session, she would first bury her hands and arms in the sand. Then, she would go to the images on the table and make her selections. This student explored many themes during her time in the research project. She explored a search for autonomy, deep connection in relationships, death, and loss. There were also snapshots of comfort, regulation and relational bonding.

Session 1

Title of tray: "The Finding Animals."

Message of the day: "Feel happy and calm."

Session 1 involved a story in which she selected a girl and a grandmother figure as central to the story. The girl was venturing away from her grandmother in repeated increments. She

Figure 1

Session 1





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would find something and then ask her grandmother if she could keep it. The girl found a bunny, a chicken, a rainbow, and a butterfly. She invited her grandmother to the place where she found a rainbow, and they both dug to discover a bouquet of flowers. Her focus of Brainspotting was on the rainbow in the scene created.

Session 2

Title of tray: "The Girl in the Forest."

Message of the day: "If you think about it, it might be a little sad, but maybe not. The girl: she was the main thing today."

The second session had a decidedly more somber tone, reflecting loss and uncertainty. While there was a clear theme of searching and worry, there was also a sense of determination and resilience.

Figure 2
Session 2





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Autumn selected the same image of the girl who was going on a walk in the forest. The girl found a turtle who was trapped on a log and needed water. She picked him up and found a "watery place" for him. She also found bird eggs that were alone and decided to create a nest out of sticks and mud for the eggs. She sat by the nest to warm the eggs even though there was a cold wind. In her Brainspotting, Autumn said her eyes wanted to focus on the turtle because "it needs water to survive, and the turtle needs help finding the water." She identified physical activation "around my eyes." She stayed still on the brainspot while making designs in the sand with her hands and fingers. She described her emotions as "a little sad because the girl doesn't have a home, and the turtle is trapped, and the eggs are looking for their mother."

Session 3

Tray Title: "The Cat"

Message: This story is really good if you wanted to take a nap or go to bed, and it would be really good to read."

Figure 3

Session 3





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Death and bereavement are at the forefront this time as session 4 occurs. The themes of unexpected loss, efforts to amend, and course correction are made valiantly, but they still result in the death of one of the heroes. Session 4 reflected the theme of loss and bereavement.

She refers to the duo as "two girls" and comments that one is "really old and the other one is 35." Quite unexpectedly, the "really old" one goes home to get her pet owl and dies on the way. The younger girl comes to check on her elder, finds her collapsed, and provides CPR. The girl calls the paramedics and says, "My mom died." When an owl appears at the funeral, it tries to help the older woman but is too late. While Brainspotting, the student focuses on the owl and notes feeling activation in her "gut/stomach." She gives an initial SUDs of 2 but does not identify an ending SUDs. Her concentration is steady. She says her emotions are "sad a bit because she died while she was walking, and the owl didn't know what was going on."

Session 5

Tray Title: *"The Digging Story"*

Figure 5

Session 5





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Message: "It's a fun story"

Key Words: "They found their pets"

As with session three there is a change in pattern during session 5. The story is about two children who live in a cozy home and play outside with their pets. The girl has a bunny, and the boy has a frog. When mom is awake, the kids ask to go outside and play. The girl does not ask for permission to go and search for things as in the first story. She just does it. She also doesn't ask for permission to get messy or dirty. She goes about the playful exploration and messiness. The children play, "They are very messy and have sand and mud all over them and have to get cleaned up." "There is sand in their clothes and in her dress." The story resolves when Mom admonishes, "Come in and get cleaned up." In Brainspotting, the eyes find their gaze on the bunny in the upper left of the tray; she focuses and tells the researcher she feels happy, putting her hand over her heart.

Figure 6
Session 5





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Session 6

Tray Title: "The Curious Story"

Message: "People wonder what the book's about."

In the final session, Autumn began by telling me she did not want to disappoint me, but she was not certain she had any more stories to tell. After looking over all the images, she selected several items and said they were all "fidgets." She created a story about the fidgets burying them on a hill to the right of the center in the sand tray, saying, "They're not there anymore." But the girl kept digging and finding them. She concluded by saying, "So the world keeps making these and she will keep digging and finding more fidgets."

She reorganized the tray as in the photo and used the location of the girl and the globe as where her eyes were drawn. Her focus on the brainspot was strong as she noted an emotion of "exciting and curious." And said that her initial SUDs was 6. At the end of the processing on a resource, she noted that SUDs were 8. Her hands were drawn to her heart as in prior sessions of

Figure 7

Session 6





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resource spotting. She concluded the session noting that the girl "digs and finds the toys," which is the most important part of the story.

Follow-up with Autumn

The data gathered at completion did not signify behavioral change as the child and parent still reported many concerns. However, the teacher indicated that Autumn was putting forth more effort in class and seemed more content and less distressed most days. Nearly six months after the study, the parent reported that Autumn was making headway at school, making new friends, and was successful at completing her homework daily. Autumn is one of many students who told her story while in the research room and gave the researcher the gift of deeper understanding and presence.

Study Limitations

Readers should interpret data with caution. BSP and ST are new approaches for use as school prevention models. Qualitative data demonstrated that children with anxiety symptoms enjoyed the intervention and were amenable to participation. Qualitative outcomes mirrored the quantitative measures, which reflected a positive change in the self-regulation of most participants. While the outcomes yielded promising statistical data, the sample size was small, and a comparison group was lacking. Pre- and post-measures allowed for comparison of matched pairs and ANOVA. However, the small sample size of 11 students who completed all intervention phases and associated paperwork indicates the need for additional power analysis to clarify adequate sample size in future research.

Additional research is warranted to learn more about integrating Brainspotting and Sand Therapy. Future studies may compare BSP, ST, combined methods, or a treatment-as-usual (TAU) control group. Proper training and supervision are imperative for clinicians considering this intervention method due to the complexity involved.

Conclusion

Quantitative data resulting from this study demonstrates promising outcomes. Students report the change as it pertains to their own identified concerns (TPA) and through the reported reduction of separation anxiety and generalized anxiety (SCAS). Parents report changes relating to generalized anxiety (SCAS), individual-specific concerns (TPA), and the observation of change in internalizing behaviors and total problems (BFS). Teachers reported change in both specific



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identified concerns (TPA) and both internalizing and total problems noted (BFS). While parents and teachers noted a change on the BFS, no significant change was observed for the students.

This study demonstrates promising efficacy of BSP and ST with children who have anxiety symptoms. Further research is warranted as children continue to need mental health support. Mental health clinicians and those in school settings may consider this as an intervention model to assist primary-age children who demonstrate anxiety symptoms. The healing method is consistent with the efforts of JAMA in the identification and screening of students who have anxiety. Outcomes of the mixed method approach reveal statistical significance in reducing anxiety and/or observed concerns as reported by teachers, parents, and students.

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