Brainspotting

A Treatment for Posttraumatic Stress Disorder

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ABSTRACT

The research base of psychological interventions for effectively treating posttraumatic stress disorder (PTSD) is limited. This classical experiment study aims to introduce Brainspotting as an effective treatment for PTSD, and symptom reduction for anxiety and depression. Participants for the study (*N* = 63) were (convenience sample of self-referring) clients who were recruited when they presented at a clinic for the treatment of PTSD. Participants completed the informed consent process, then were randomly assigned to receive either five weeks of treatment as usual (TAU; cognitive-behavioral therapy, solution-focused, person-centered, psychodynamic), or five weeks of Brainspotting treatment. Assessments were taken at pre-treatment, post-treatment, and a four-week follow-up with 27 participants who completed treatment. Results showed that participants in both groups decreased in symptoms of PTSD. In general, TAU was better initially posttreatment, while Brainspotting showed more longitudinal benefits at the follow-up stage. Implications for these findings are discussed, and recommendations for future research are given.

Keywords: anxiety, brainspotting, depression, post-traumatic stress, trauma

... this fixed-eye position results from activation in the superior colliculi (SC), one of the first areas of the brain activated when there is a perceived threat.

The effectiveness of brainspotting as treatment for PTSD

Approximately eight million adults in the U.S. are diagnosed with post-traumatic stress disorder (PTSD) annually (U.S. Department of Veterans Affairs, 2019). Ten percent of women develop PTSD sometime in their lives, compared to 4% of men

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(U.S. Department of Veterans Affairs, 2019). It is estimated that 10% to 20% of those exposed to trauma through direct experience or vicarious witness will develop short-term symptoms of PTSD. Some will continue to develop chronic long-term symptoms. The assessed lifetime pervasiveness of PTSD among adults is roughly 8% (Merz et al., 2019). Currently, only 30% of individuals experiencing PTSD experience a significant reduction in symptoms via available treatment (Talbot et al., 2023).

Over the past two decades, research has increased regarding efficacy-based treatments for PTSD. However, the need for treatment is growing faster than research is being published (Gurda, 2015). Psychotherapy is preferred over medication alone (Merz et al., 2019), highlighting the need for more psychotherapeutic, evidence-based research.

Background on the effects of trauma

In the aftermath of traumatic events, individuals are vulnerable to reacting to sensory information in the present as if they were re-experiencing the past traumatic event (American Psychiatric Association, 2013). Past trauma leaves them with neurobiological abnormalities such as hypercortisolism (adrenal insufficiency), which drives abnormal stress encoding and fear processing, promotes hippocampal atrophy, and increases dopamine levels, which interfere with fear conditioning by the mesolimbic system and increase arousal, startle response, and the encoding of fear memories (Sherin & Nemeroff, 2011; 2022). Abnormalities also include increases in the activity of the amygdala, promoting hypervigilance and impairing the ability to discern the threat level (Sherin & Nemeroff, 2011; 2022). This type of vulnerability impacts individuals' ability to regulate emotions, causes impairment in thinking, and leads to changes in hormonal levels (Substance Abuse and Mental Health Services Administration, 2010; 2014). Emerging therapies are at the forefront of a movement to integrate somatic elements into therapy and theory regarding how trauma is encoded in the mind-body connection, and ways to resolve its effects (Gurda, 2015).

According to Corrigan, Grand, and Raju (2015), effective treatment needs to include supporting the maladaptive areas of the brain and body. "Full orientation to the aversive memory… fails to occur when a high level of physiological arousal that is threatening to become overwhelming promotes a neurochemical de-escalation of the activation: there is no resolution. In Brainspotting and other trauma psychotherapies, healing can occur when full orientation to the memory is made possible" (Corrigan et al., 2015, p. 1).

American Psychological Association guidelines for trauma treatment

The American Psychological Association (APA) has created a set of guidelines for trauma treatment based on extant research (APA, 2017). Recommendations include cognitive behavioral therapy (CBT), cognitive processing therapy (CPT), cognitive therapy (CT), and prolonged exposure therapy (PE). The panel conducting the review suggested the use of brief, eclectic psychotherapy (BEP), eye movement desensitization and reprocessing (EMDR), and narrative exposure therapy (NET). At the same time, there is insufficient evidence to recommend for or against offering Seeking Safety (SS) or relaxation (RLX) (APA, 2017).

Recent reporting addresses some limitations to these guidelines and the method of reviewing statistics (Dominguez & Lee, 2017). There is a need to consider other modalities, based on an increasing demand by clinicians to provide trauma care using methods not yet researched (Gurda, 2015), the drop-out rate of treatment (Imel et al., 2013), top-down therapy (Corrigan & Hull, 2015), and the results of the Adverse Childhood Experiences (ACE) study (Felitti et al.,1998). Brainspotting is a treatment that could address these limitations in current trauma treatments.

How Brainspotting works

Brainspotting (BSP) was developed by David Grand, Ph.D., in 2003 (Grand, 2013). At that time, Dr. Grand was a practicing EMDR trainer. Grand shifted away from EMDR, noting that certain clients were overactivated by the rapid eye movements, and developed a process that he further refined and called Natural Flow (Grand, 2013). This therapy involved slower eye movements. He continued his studies with colleagues and eventually shifted to a fixed-focus-point therapy, which he termed Brainspotting (BSP).

BSP is a psychotherapy aimed at helping patients suffering not only from PTSD, but also from emotional dysregulation, anxiety, or depression. The original type of BSP, Outside Window, was discovered during a session when Grand was working with a figure skater who had trouble performing a triple loop. He began the session with the client focusing on the moment right before she popped her jump, which was the presenting problem. Grand was working with Natural Flow until he noticed her eye movements wobbling and freezing on a particular spot in the client's field of vision. Grand stopped and waited for 10 minutes as the client reported material that had not been previously reported, such as the client being blamed for her parents' divorce because of her skating. The next day, the skater called to report that she had no trouble doing her triple loop at the competition. Grand observed other clients' reflexive movements, and discovered similar process patterns.

In a typical BSP session, the client and therapist define an emotional and somatic activation linked to an issue. Once the issue is defined, the client rates the level of activation on a Subjective Units of Distress (SUDS) rating scale from 1 (no activation) to 10 (high activation; Tanner, 2012; Milite, 2018), which is a practice similar to what is used in EMDR and other trauma therapies. At this point in the session, the therapist works with the client to find a relevant eye position connected to the defined therapeutic issue and somatic activation. The fixed-eye position supports the client's access to deep subcortical brain activity during a focused mindfulness process (Masson et al., 2017).

Eye positions can be found in one of three ways:

- Outside Window is where the therapist uses an extended pointer to move slowly horizontally across the patient's visual field, looking for outwardly observable, reflexive responses. Once a reflexive response is seen, the therapist holds the pointer at the relevant eye position and guides the client to continue to observe his or her internal process mindfully with curiosity.

- Another way of finding a relevant eye position is with the Inside Window approach. This method of locating the eye position uses a similar setup of defining the emotional and somatic activation around a presenting issue. The client is guided to look at the extended pointer along the horizontal visual field (x-axis), and then vertically (y-axis), until a relevant eye position is defined. The position is based on the client's self-reflexive reporting associated with their activation level.

- The last method of finding eye positions is called Gazespotting, using spontaneous gazing as the client is speaking about the clinical issue. The attuned therapist points out the natural flow of the client's eyes to a specific spot, and encourages them to stay on that spot as they go into the focused mindfulness part of the work (Kaufman, 2015).

Once the eye position is located, the client continues with Brainspotting-induced processing in the treatment phase using focused mindfulness (Grand, 2013). Mindfulness is a meditative awareness of the present-moment experience with no assumptions or judgment (Kabat-Zinn, 2012). Here, the client continues to look at the identified position, and enters a deep state of mindfulness while periodically reporting to the therapist.

BSP uses the fixed-eye position corresponding to the client's felt sense of trauma, which accesses the subcortical brain. Corrigan & Grand (2015) have hypothesized that this fixed-eye position results from activation in the superior colliculi (SC), one of the first areas of the brain activated when there is a perceived threat. He hypothesizes that not only does the SC respond to the threat itself, but it also responds to the threat-trauma neural network that develops because a complete orientation to trauma does not occur in the client's memory. That is, clients have not processed that they have survived trauma. SC pathways allow the brain's natural tendency toward organization to orient to the trauma experience fully. Thus, the SC pathways allow for implicit and explicit memory to be reconsolidated through optimal thalamocortical (thalamus to the cortex) processing. BSP accesses the SC pathways without the need for the client to explicitly recall disturbing memories or to talk about or relive the trauma. Through BSP, the entrenched trauma neural network is dismantled and no longer launches, thus relieving the psychological symptoms of trauma (Corrigan et al., 2015).

When applying the process of having the client sense an emotional and somatic activation, the brain centers associated with this felt sense appear to be activated (Corrigan & Grand, 2013). Once on the activated brainspot, the attuned presence

of the therapist provides support for the client to move through various cycles of a resting and active state. This attuned presence is vital for healing (Scaer, 2012). Scaer (2012), having observed BSP sessions, pointed out that the attuned presence of another human activates mirror neurons between the cingulate and the orbital frontal cortex, creating an empathic environment and inhibiting the amygdala. Face-to-face attunement is critical for healing in trauma work (Scaer, 2012). Scaer (2012) references BSP specifically: "It should be noted that the therapist requires intense attunement to attain the brainspot, a potentially important element for its efficacy" (Scaer, 2012, p. 148).

Kaufman (2015) described the components of BSP that are similar to and different from the components of EMDR. Kaufman references the eye position as a significant difference between BSP and EMDR. In EMDR, there are rapid eye movements, but in BSP, the client's eyes stay on one point. In the comparison, Kaufman referenced a study by Logie (2014): "A point of conflict within the EMDR literature is equivocal conclusions about the necessity of eye movements" (Kaufman, 2015, p. 93). Participants in Kaufman's (2015) study appeared to be quite sure that different eye positions produce pronounced alterations in their subjective assessments.

Levine (1997) and Ogden et al. (2006) have expanded on the concept of orienting to a specific spot in relation to trauma. They reference the sequence of orientation in response to a stimulus. When the entire sequence fails to complete at the time of trauma, some components are left unresolved, and are liable to recur when triggered. Scaer (2012), Levine (1997), and Badenoch (2008) also reference the importance of trauma therapy reaching unresolved experiences to be effective. The physiological activation has not been discharged from memory. Accessing the relevant eye position is promoted as a careful, mindful way to support trauma resolution (Corrigan & Grand, 2013) without over-activating or re-traumatizing the client.

The importance of the therapist-client relationship in Brainspotting

The critical components of BSP treatment are based on the uncertainty principle (Corrigan & Grand, 2013) within the context of supporting the therapist-client relationship and engaging the body and brain using the focused-eye position. Applying all of these simultaneously in a therapeutic environment may be a primary reason for the effectiveness of BSP (Corrigan & Grand, 2013). Kaufman (2015) researched these components in his dissertation involving 16 adults: eight clients and eight therapists. Results indicated that the individuals could alleviate their pain through BSP, and did not diminish their individual uniqueness. Decades of research have indicated that therapy is an interpersonal process in which a main curative component is the nature of the therapeutic relationship (Lambert & Barley, 2001). BSP harnesses this, and clinicians trained in this modality are reminded that the relationship is more important than the methodology.

The therapist and client check in with each other during the process. With an attuned focused, empathic presence, the therapist tracks the client's neurobiology (breathing, body movements, eye movements, and reflexive movements), and checks with the client throughout the process on the nature and severity of the activation in the body, thus allowing the process to unfold from within the client's experience (Corrigan & Grand, 2013). Typically, the session concludes with a reference to the original issue through the client reporting on his or her current state of being. The Subjective Units of Distress (SUDS) may also be revisited to get a sense of movement. However, the SUDS number is not the only determining factor regarding the client's state of being. The therapist relies on the client's reporting as well. The session concludes once the SUDS rating is complete (Grand, 2013).

Brainspotting as an effective therapy for trauma

Gurda (2013) cited BSP as one of three emerging therapies (with yoga and energy psychology) worthy of further study. The National Institutes of Health has classified yoga as a form of Complementary and Alternative Medicine (Woodyard, 2011). Energy Psychology has since been validated by the National Repertory of Evidence-Based Practices and Procedures (NREPPP), a division of the Substance Abuse and Mental Health Services Administration (SAMHSA), as an evidence-based treatment (Energy Psychology, 2019).

One of the first worldwide research studies conducted by Hildebrand et al. (2017) in Germany

examined the efficacy of BSP. This was a comparative study with EMDR and BSP for the treatment of PTSD. Participants included 76 adults who sought professional help after a traumatic event. Clients received BSP or EMDR with a pre-test, three 60-minute sessions of EMDR (n = 23) or BSP (n = 53), and a six-month follow-up. Primary outcomes were self-reports of the severity of PTSD symptoms. Secondary outcomes included self-reported symptoms of depression and anxiety. Results showed that participants in both studies experienced significantly reduced PTSD symptoms. For clients treated with EMDR, effective sizes from baseline to post-treatment concerning PTSD were 1.19 to 1.76, and for BSP, 0.74 to 1.04. The study concluded Brainspotting is an effective treatment for clients who experience a traumatic event or have PTSD, with its authors noting that more research on its efficacy is needed.

Another study that found BSP an effective alternative therapy for trauma survivors was reported by the Newtown-Sandy Hook Community Foundation, Inc. (2019). This research examined therapy effectiveness following the Sandy Hook Elementary School shooting. There were 945 responses to the survey, and participants were asked a series of questions to understand better what therapeutic interventions were effective. Participants reported that BSP (n = 22) had 59.09% efficacy, which was better than EMDR (n = 54) at 31.48%, and traditional talk therapy (n = 223) at 25.11%. However, this study is limited by the low number of participants who completed BSP (and EMDR) as treatment.

A grey paper from Spain examining treatment for Generalized Anxiety Disorder (GAD) presented a clinical experimental comparison of CBT, EMDR, and BSP, in which these three therapeutic interventions were administered to 59 patients with GAD and a control group. Treatment efficacy was assessed using the State-Trait Anxiety Inventory (STAI; Spielberger, 1983), the Beck Anxiety Inventory (BAI; Beck et al., 1988), and SUDS. Results of the study indicated that both EMDR and BSP could be effectively used in treating GAD (Anderegg, 2015).

A case study (Mattos et al., 2015) referenced BSP as a treatment modality of choice for persistent genital arousal disorder (PGAD). BSP intervention proved helpful in relieving disabling symptoms in

patients after only six months, and complete remission was achieved within one year of intervention.

A dissertation was completed at the University of West Georgia on Experiential Reframing as a psychotherapeutic modality for helping clients unable to synthesize their emotional and cognitive understanding of certain significant events. The paper points to BSP as an experientially-based therapy with good clinical track records. The other modalities discussed are EMDR, Sensorimotor Psychotherapy, Hakomi, and the Pesso-Boyden System Psychomotor (PBSP; White, 2016). Most recently, Fabio, Alessio, Franco, and Cristiano (2022) published an article confirming BSP as an effective modality for processing distressing memories in a 40-minute sitting.

The purpose of the current study was to compare the effectiveness of BSP with therapy as usual in individuals presenting with trauma experiences to a clinic. Since limited research is available, a research question was forwarded instead of a hypothesis. The specific research question under study was: How does the effectiveness of Brainspotting compare to cognitive behavioral therapy? Further, do clients like Brainspotting as well as cognitive behavioral therapy?

Method

Participants for the study were 63 clients (8 men, 52 women, and three who did not indicate gender) who presented at the private practice for initial treatment of PTSD. These clients self-reported that they had received no previous specific trauma treatment therapy. Their mean age was 33.71 years (SD = 12.24). Racial/ethnic breakdown was as follows: 16 (25.4%) Caucasian, 3 (4.8%) African American, 1 (1.6%) Hispanic, and 43 (68.3%) who did not report ethnicity.

There were 27 participants (13 in the Treatment as Usual [TAU] condition and 14 in the BSP condition) who completed the treatment protocol, and 36 participants (24 in the TAU condition and 12 in the BSP condition) who did not complete the treatment protocol. The mean age of the participants who completed the treatment protocol was 35.15 (SD = 12.91). There were 20 women and four men, with three who did not indicate gender, who completed the treatment protocol. The racial/eth-

nic breakdown for those who completed was as follows: 6 (22.2%) Caucasian, 3 (11.1%) African American, and 18 (66.7%) did not report ethnicity. There were no differences between those who completed the treatment protocol and those who did not in age or the pre-treatment measures (all t's < .8; all p's > .4).

Three assessments were administered to participants in pre-treatment, post-treatment, and the follow-up session. One assessment was administered before each of the five treatment sessions, and one at the end of each treatment session. Also, the treatment provider completed a session note for each session. All documentation was sent to the team after the follow-up session was completed. The providers kept a copy of the session notes for their medical records. The three assessments for the pre-treatment, post-treatment, and follow-up session included: the Post Traumatic Stress Disorder Diagnostics Scale for DSM-5 (Foa, 2015); the Beck Depression Inventory, Second Edition (Beck,1996); and the Beck Anxiety Inventory (Beck, 1990). At the beginning of each of the five treatment sessions, the Outcome Rating Scale (ORT; Miller & Duncan, 2003) was administered to the participant. At the conclusion of each session, the participant received a Session Rating Scale (Duncan et al., 2003) to complete. The provider recorded each session on the coordinating session note. The session note included the participants' self-reported Subjective Units of Distress Ratings (SUDS) at the beginning and end of each session, along with the participants' state of stabilization at the conclusion of each session.

- **Posttraumatic Stress Disorder Symptom Scale for DSM-5**. The Posttraumatic Stress Disorder Diagnostic Scale (PTSDSS; Foa et al., 2015) is a 24-item self-report measure that evaluates symptoms of PTSD and their effect on a person's life. The first 20 items on the PTSDDS are scored on a five-point Likert scale from 0 (not at all) to 4 (6 or more times per week/severe). Item scores are summed, ranging from 0 to 80, with higher scores indicating more PTSD symptoms. An example item is "Feeling emotionally upset when reminded of the trauma." Items 21 and 22 are scored identically, address distress and interference, and are not included in the overall score. The last two items evaluate the onset and duration of the symptoms, and are not included in the scoring. These items distinguish between

symptom duration of longer than six months and less than six months. The PTSDSS has been shown to have good psychometric qualities, with the internal consistency of α = .89, test-retest reliability of r = .87, and convergent validity as demonstrated by strong correlations (r's greater than .72) with other measures of PTSD (Foa et al., 2015).

- **Beck Depression Inventory, second edition**. The Beck Depression Inventory, second edition (BDI-II; Beck et al., 1996) is a 21-item measure that evaluates symptoms of depression. The BDI-II is scored on a four-point Likert scale from 0 to 3 (each item has a different anchor). Items are summed, and scores range from 0 to 33, with higher scores indicating more symptoms of depression. An example item is Guilty Feelings (0: I do not feel particularly guilty; 1: I feel guilty a good part of the time; 2: I feel guilty most of the time; 3: I feel guilty all the time). Internal consistency for the BDI-II has been measured at α = .90, and concurrent validity was supported with correlations between the BDI-II and other measures of depression (Storch et al., 2004).

- **Beck Anxiety Inventory**. The Beck Anxiety Inventory (BAI; Beck & Steer, 1990) is a 21-item measure that evaluates anxiety symptoms. It is scored on a four-point Likert scale, from 0 (not at all) to 3 (severely). Items are summed, and scores range from 0 to 33, with higher scores indicating higher anxiety symptoms. Example items include "Numbness or tingling," "Unable to relax," and "Fear of losing control." The BAI has been shown to have good psychometric qualities, with an internal consistency of α = .94, an 11-day test-retest reliability of r = .67, and good concurrent validity, demonstrated by correlations ranging from r = .34 to r = .75 with other measures of anxiety (Fydrich et al., 1992).

Outcome Rating Scale. The Outcome Rating Scale (ORS; Miller et al., 2003) is a four-item scale that measures client perceptions of therapy session effectiveness. The items evaluate general wellbeing, personal wellbeing, family/close relationships, and work/school/friendships. Respondents are provided a 10 cm line to mark how much they experience each construct. Items are scored by measuring the distance from the left of the person's marks. Scores closer to the right of the line indicate high-

er levels of the construct. Scores range from 0 to 40. The ORS has been shown to have good psychometric qualities, with internal consistency ranging from α = .86 to α = .96, and concurrent validity as demonstrated by strong correlations (r's ranging from .74 to .93) with the Outcome Questionnaire 45.2 (Miller et al., 2003).

Session Rating Scale, V.3.0. The Session Rating Scale, V.3.0 (Duncan et al., 2003) is a four-item measure of the therapeutic alliance between the client and the therapist. The items measure relationships, goals and topics, approach or method, and overall. Respondents are provided a 10 cm line to mark how much they experience each construct. Items are scored by measuring the distance from the left of the person's marks. Scores closer to the right of the line indicate higher levels of the construct. Scores range from 0 to 40. The SRS has been shown to have good psychometric qualities, with an internal consistency of α = .86, test-retest reliability of r = .70 (periods ranged from one to two weeks), and concurrent validity, as demonstrated by a correlation of r = .48 between the SRS and the Helping Alliance Questionnaire II (Duncan et al., 2003).

Subjective Units of Distress Scale. The Subjective Units of Distress Scale (SUDS) is a single item in which participants are asked to rate their overall level of distress/disturbance due to psychological symptoms. The item is measured on an 11-point scale, from 0 (no distress) to 10 (extreme distress). SUDS is a commonly used measure in psychotherapy to quickly assess client disturbance. The SUDS used to rate emotional discomfort has been shown to have good validity via negative correlations (r = −.43) with clinician ratings of client functioning (Tanner, 2012).

Procedure

All original authors completed and passed the Basic Collaborative Institutional Training Initiative Program (CITI Program) specific to Human Subject Research Ethical Education. The completion and passing of CITI was required by the Western Kentucky University (WKU) Institutional Review Board (IRB) before submitting the research proposal. The research proposal was approved by WKU IRB with the reference number of IRB#19-060 on 9/06/2018. Cheryl Goldberg, who conducted the double-blind research at a private group practice

in North Carolina in 2018, joined the author team in late 2020 solely to write the conclusion long after her original task as research coordinator for the project was completed. Lauren Brdecka joined the research project in 2023 for editing and manuscript submission.

New clients coming to a private practice group clinic who presented with PTSD or were diagnosed with the disorder in their initial intake session were offered the opportunity to participate in the research study. Once a client agreed to participate in the research, an informed consent procedure was conducted and completed, including a description of participation and a release form. The client participants then completed a pretreatment assessment packet, including PTSDSS, BDI-II, and BAI. They were then randomly assigned to treatment providers. The private practice group clinic has BSP and traditional talk therapy (TAU) providers. The BSP providers participating in the research completed Phase 1 and Phase 2 BSP training in person, not via Digital Versatile Disk (DVD). The TAU providers used any best practice treatment they preferred (or that was clinically indicated) when providing treatment for the participants. However, they had no training in the following treatments: Trauma-Focused Cognitive Behavioral Therapy (TFCBT), Eye Movement Desensitization Reprogramming (EMDR), Emotional Freedom Therapy, or Somatic Experiencing. The TAU providers had no limitations on the style of their psychotherapeutic interventions, or the origin of their theories. However, they all identified their treatment style and the origin of the theory that was administered in each session on the session note document.

Treatment providers scheduled and conducted five treatment sessions with each participant. The five sessions were scheduled on a weekly or biweekly rotation, determined by the participant and provider. Each session was documented by both the provider and the participant. The provider used the coordinating note for the treatment being provided; the note documented the beginning and end of SUDS ratings. At the conclusion of the session, the client's self-reported state of stabilization was documented as poor, fair, good, or excellent. There was also a summary section for the treatment provider to add any additional information about the session. The participant completed the ORS at the beginning of each session, and the SRS V.3.0 at the end.

Table 1. *Means, standard deviations, and Cronbach's alphas for the PTSDSS, the BDI, and the BAI at pre-treatment, post-treatment, and follow-up*

Variable (*N*)	Min	Max	M	SD	alpha
Pre–Treatment					
PTSDDS (62)	32	83	61.91	12.11	.76
BDI (62)	7	58	29.56	12.11	.92
BAI (63)	4	50	26.33	11.94	.90
Post–Treatment					
PTSDDS (29)	10	64	35.93	13.74	.86
BDI (30)	5	43	18.33	10.78	.87
BAI (31)	2	35	14.87	9.18	.88
Follow–Up					
PTSDDS (27)	6	75	34.44	18.27	.92
BDI (27)	1	43	18.74	11.00	.88
BAI (26)	2	36	15.80	10.07	.90

Note: PTSDSS = Post Traumatic Stress Disorder Diagnostic Scale; BDI = Beck Depression Inventory; BAI = Beck Anxiety Inventory; Min = lowest reported score on the measure for the time; Max = highest reported score on the measure for the time.

The follow-up session occurred no less than four weeks and no more than six weeks after the final therapy session. At the follow-up session, participants were again administered the pre-test assessment tools. Once the assessments were complete, the client was no longer a research participant. The research team encouraged the client and the provider to reevaluate the treatment plan, and determine what future treatment was needed. After the conclusion of the follow-up session, the provider mailed all documentation to the research team for statistical analysis.

Results

Preliminary analyses included scores on the PTSDSS, BDI-II, and BAI, which were summed for participants at pre-treatment, post-treatment, and follow-up. In addition, Cronbach's alphas were computed for each measure at each time. See Table 1 for means, standard deviations, and Cronbach's alphas for the PTSDSS, BDI, and BAI each time. The ORS and SRS scores were summed for each of the five treatment sessions, and Cronbach's alphas were computed for each session. Means, standard deviations, and Cronbach's alphas are presented

in Table 2. In addition, the mean initial SUDS score (and standard deviation) is presented in Table 2.

The research question examined BSP's effectiveness compared to TAU when treating trauma. This was evaluated using a series of 3 (pre-treatment v. post-treatment v. follow-up) × 2 (BSP v. TAU) Repeated Measures Analyses of Variance (ANOVAs). The dependent variables include scores on the PTSDSS, BDI-II, and BAI.

Results of the 3 × 2 Repeated Measures ANOVA examining scores on the PTSDSS indicated an interaction between time and group, $F(1, 23) = 4.61$, $p = .04$. There were differences in the scores on the PSSI over time, based on the group. In addition, there was a significant main effect for time, $F(1, 23) = 61.13$, $p < .001$, such that scores on the PSSI differed across time. There was not a main effect for group $F(1, 23) = 0.73$, $p = .40$. These results are displayed in Figure 1.

Results of the 3 × 2 Repeated Measures ANOVA examining scores on the BDI-II indicated an interaction between time and group, $F(1, 24) = 7.12$, $p = .01$. There were differences in the scores on the BDI over time, based on the group. In addition, there was a significant main effect for time,

Table 2. *Means, standard deviations, and Cronbach's alphas for the ORS, SRS, and initial SUDS score for each of the five treatment sessions*

Variable (*N*)	Min	Max	M	SD	alpha
Session 1					
ORS (55)	0.50	30.90	15.48	7.94	.83
SRS (55)	6.70	40.80	31.72	7.78	.94
SUDS (55)	0	10	5.91	2.47	
Session 2					
ORS (46)	5.60	39.30	18.45	8.38	.86
SRS (46)	5.40	41.20	35.52	5.25	.97
SUDS (48)	0	9	5.19	2.30	
Session 3					
ORS (35)	2.80	36.80	21.18	9.84	.92
SRS (33)	11.40	41.20	35.52	5.25	.98
SUDS (35)	0	10	5.80	2.41	
Session 4					
ORS (33)	1.90	38.40	22.10	11.10	.94
SRS (33)	27.00	41.20	36.67	2.91	.96
SUDS (35)	0	10	5.53	2.57	
Session 5					
ORS (29)	4.40	40.50	26.88	9.20	.94
SRS (29)	26.70	49.70	37.32	3.66	.66
SUDS (30)	0	9	4.48	2.71	

Note: ORS = Outcome Rating Scale; SRS = Session Rating Scale; SUDS = Subjective Units of Distress; Min = lowest reported score on the measure for the time; Max = highest reported score on the measure for the time. Please note that the SUDS is a single item; therefore, Cronbach's alpha cannot be computed.

$F(1, 24) = 28.29$, $p < .001$, such that BDI scores differed across time. There was also a main effect for group $F(1, 24) = 145.99$, $p < .001$. These results are displayed in Figure 2.

Results of the 3 × 2 Repeated Measures ANOVA examining scores on the BAI indicated no interaction between time and group, $F(1, 24) = 0.97$, $p = .33$. There were no differences in the scores on the BAI over time, based on the group. However, there was a significant main effect for time, $F(1, 24) = 26.00$, $p < .001$, such that BAI scores differed across time. The main effect for the group was $F(1, 24) = 93.25$, $p < .001$. These results are displayed in Figure 3.

Improvement during therapy was measured using SUDS ratings and the ORS. Two 2 (Condition: BSP v. TAU) × 5 (Session: one v. two v. three v. four v. five) repeated measures ANOVAs were conducted to evaluate changes in the SUDS ratings and ORS scores.

Results of the 2 × 5 repeated measures ANOVA examining beginning SUDS ratings for the clients indicated that there was no interaction between time and group, $F(1, 27) = 3.00$, $p = .10$. There was a main effect for time, $F(1, 27) = 5.28$, $p = .03$, such that SUDS ratings decreased across time. There was no main effect for group $F(1, 27) = 0.81$, $p = .38$. These results are displayed in Figure 4.
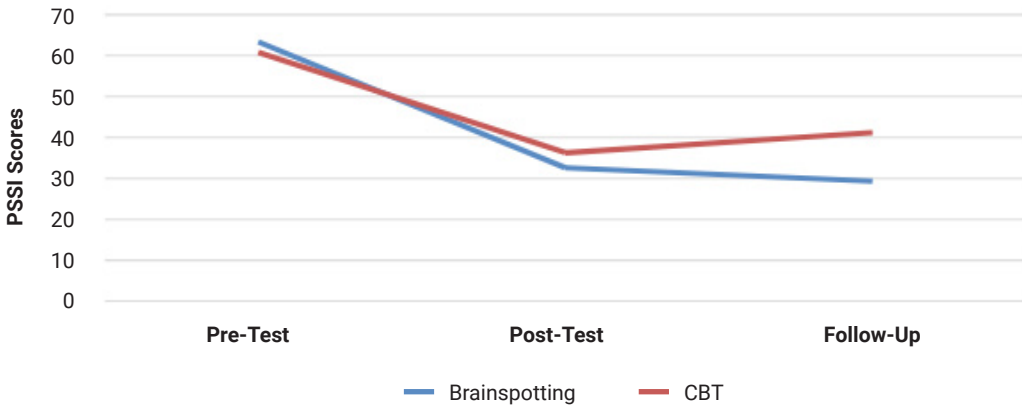
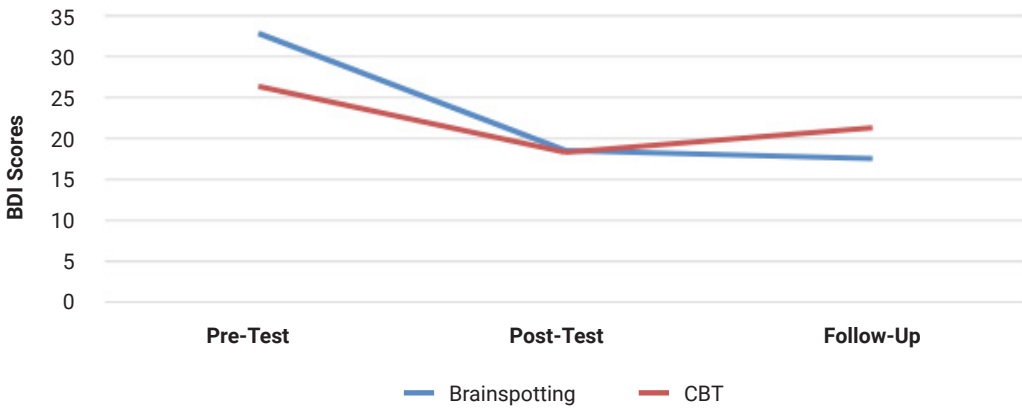**Figure 1**. *Scores on the PSSI at pre-treatment, post-treatment, and follow-up*

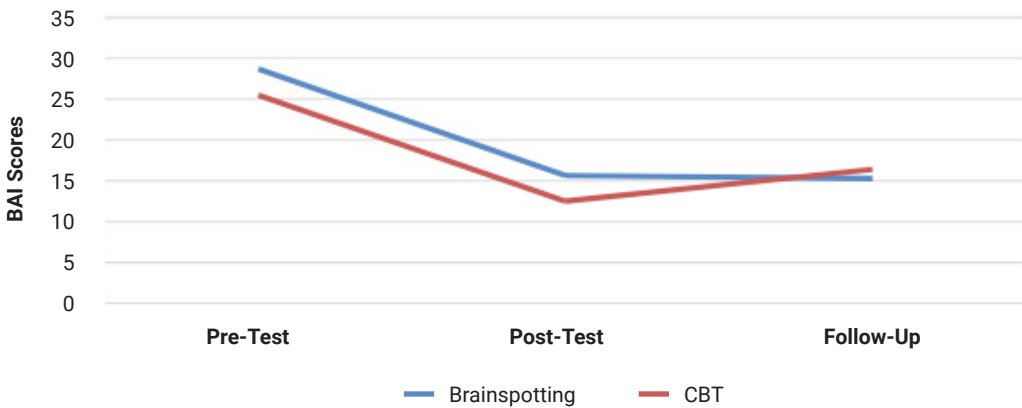**Figure 2**. *Scores on the BDI at pre-treatment, post-treatment, and follow-up*

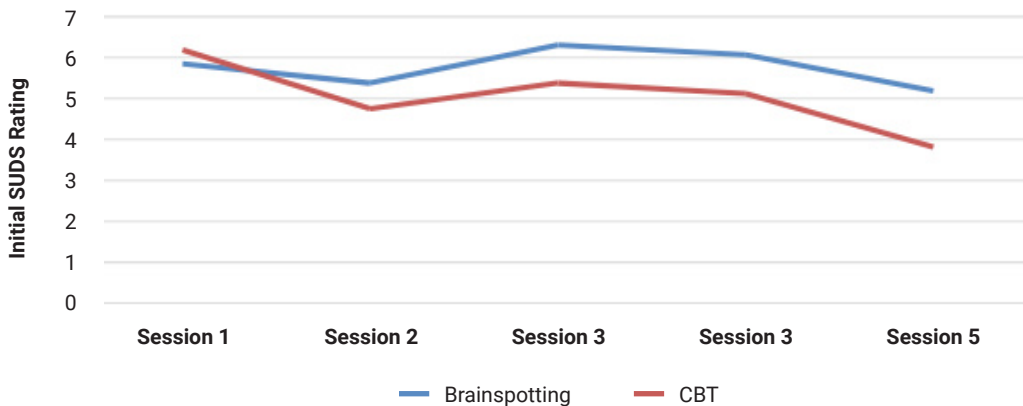**Figure 3**. *Scores on the BAI at pre-treatment, post-treatment, and follow-up*

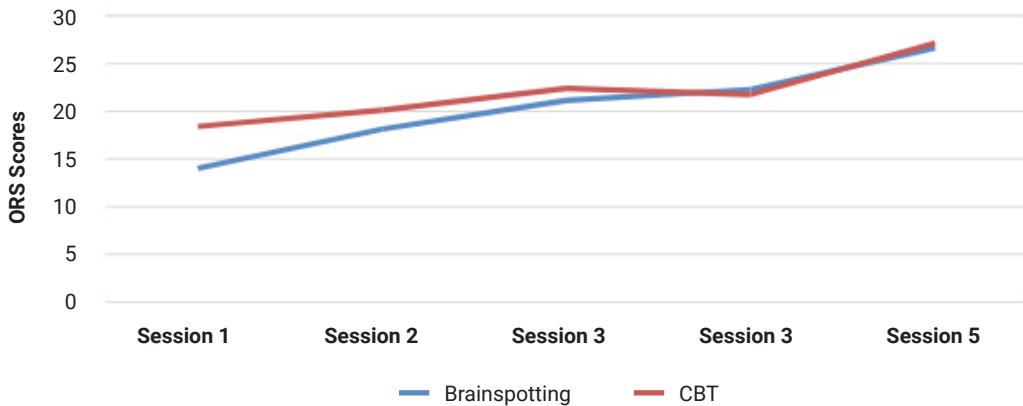**Figure 4**. *SUDS ratings from the beginning of each therapy session*
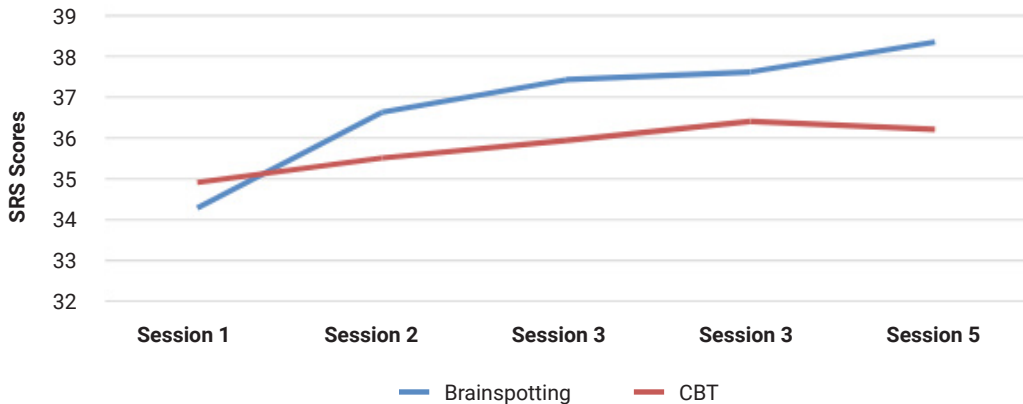

Figure 5. *ORS scores from each therapy session*

Figure 6. *SRS scores from each therapy session*

Results of the 2 × 5 repeated measures ANOVA examining ORS scores from the clients indicated that there was no interaction between time and group, $F(1, 27) = 1.45$, $p = .24$. There was a main effect for time, $F(1, 27) = 31.94$, $p < .001$, such that ORS scores increased over time. There was not a main effect for group $F(1, 27) = 0.28$, $p = .60$. These results are displayed in Figure 5.

The SRS measured client satisfaction with the therapy session. Repeated measures 2 (Condition: BSP v. TAU) × 5 (Session: one v. two v. three v. four v. five) repeated measures ANOVA was conducted to evaluate changes in SRS scores across sessions.

Results of the 2 × 5 repeated measures ANOVA examining SRS scores from the clients indicated that there was no interaction between time and group, $F(1, 27) = 3.56$, $p = .07$. There was a main effect for time, $F(1, 27) = 17.93$, $p < .001$, such that SRS scores increased over time. There was not a main effect for group $F(1, 27) = 1.18$, $p = .29$. These results are displayed in Figure 6.

Discussion

Around eight million adults in the U.S. are diagnosed with PTSD annually (U.S. Department of Veterans Affairs, 2019). There is a growing need for clinicians trained in modalities effective in treating PTSD. While research into viable treatment methods has increased, research also shows a need for more efficacy-based treatments for PTSD (Gurda, 2015). This study sought to assess if BSP is an effective treatment for PTSD in comparison to TAU, using instruments that measure anxiety, depression, and PTSD symptoms in addition to measures demonstrating both participants' satisfaction with and perception of the effectiveness of the treatment they received.

The BSP treatment group received five sessions of Brainspotting using techniques from Phase 1 and Phase 2 training. The control group received five sessions of TAU using traditional empirically validated treatment of the providers' choice and expertise. Each participant completed the PTSDSS, BDI-II, and BAI pre-and post-treatment in a four-to six-week follow-up.

Post-treatment assessments indicate that BSP and CBT were both effective in reducing symptoms related to PTSD, depression, and anxiety. This supports similar findings from a German study that found that participants receiving BSP experienced a reduction in post-traumatic symptoms (Hildebrand et al., 2017). Empirically validated treatments of trauma are also effective (APA, 2017; Stern, 2019).

Analyses of the PTSDSS, BDI-II, and BAI follow-up assessments show a significant decrease in symptoms across time for those receiving BSP compared to those receiving TAU, who, on average, demonstrated an increase in symptoms at follow-up. This indicates that BSP has a lasting treatment effect even when participants are not actively receiving treatment. These results, particularly those on the BAI, are similar to findings found in the grey paper from Spain researching the effectiveness of CBT, EMDR, and BSP on Generalized Anxiety Disorder (GAD; Anderegg, 2015). In that study, researchers found that each treatment modality was effective in treating GAD, and, during a six-month follow-up, identified a significant reduction in symptoms in the BSP group compared to groups receiving both CBT and EMDR. Results showed that while EMDR had a steady effect six months post-treatment, CBT's effects decreased over time.

Part one of the research question – how does the effectiveness of BSP compare to the effectiveness of TAU? – is answered using the findings on the post-treatment and follow-up assessments, which support a reduction in symptoms across all measures (PTSDSS, BDI-II, and BAI) for both groups, and a further decrease in symptoms over time for the BSP group alone. Thus, we can infer that BSP is more effective than CBT in reducing post-traumatic symptoms long term.

Analyses of results from the ORS and SUDS scale similarly indicate improvement over time in both the BSP and TAU groups. Findings from the SRS also demonstrated improvement over time in satisfaction with therapy across both groups. These results address part two of the research question – do clients like BSP as much as TAU?

Conclusion

The overall results of this study indicate that BSP is as effective as TAU in reducing trauma-related symptoms and symptoms of depression and anxiety. While the post-treatment results for participants in both the BSP and TAU groups demonstrated improvements, the follow-up evaluations also

showed a continued decrease in symptoms only for those participants who received BSP.

While the study demonstrates positive results for the effectiveness of BSP as a treatment intervention, it was limited in sample size and treatment techniques. Clinicians providing BSP for study participants were required to have a minimum amount of training in BSP (both Phase 1 and Phase 2). At the same time, there were no specific training requirements for clinicians providing TAU.

This study highlights the need for further research on the effectiveness of BSP as a treatment inter-vention for PTSD compared to CBT. There are a variety of cognitive therapies for treating PTSD, including CBT, cognitive processing therapy, cognitive therapy, and prolonged exposure therapy (APA, 2017). Additional research could compare the efficacy of BSP to each of those treatment methods, which could support the hypothesis that BSP is an effective treatment intervention for PTSD. Further research might also compare BSP to EMDR in order to address sample size limitations of the Hildeberg et al. (2017) study, and to body-based interventions for treating PTSD, such as Somatic Experiencing.

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