

# Journal for Psychotraumatology, Psychotherapy Science and Psychological Medicine.

A preliminary study of the efficacy of Brainspotting – a new therapy for the treatment of Posttraumatic Stress Disorder

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Version: 14.1129.05.2012 Words: 3,193 Characters including spaces: 24,488  
(accepted for publication in 2014)

## Summary

Posttraumatic Stress Disorder (PTSD) occurs frequently in people, who were exposed to extreme mental stress. Therefore, it is important to develop an effective and well evaluated treatment for this disorder. This preliminary study evaluates the effectiveness of Brainspotting (BSP) - the by David Grand newly developed therapeutic approach for the treatment of PTSD. Data were evaluated of 22 clients from Germany and the USA, who were treated with Brainspotting. Both, the client's self-assessment as well as a general assessment by the therapist were collected by questionnaire. The symptoms of PTSD and additional mental impairments were significantly reduced within three BSP-sessions. According to the therapist a reduction of symptoms was seen in the majority of clients. According to clients' self-reports the emotional burden decreased by less negative trauma-related cognitions. These first results show that the treatment of PTSD could be extended with Brainspotting, which provides an effective therapie.

Key words: Brainspotting, trauma therapy, efficacy study, preliminary

## Abstract

Posttraumatic stress disorders (PTSD) frequently emerge in people who have suffered from extreme psychological stress. Therefore, it is of most importance to develop new therapeutic treatments and to test their efficacy. This pilot study investigates the efficacy of a newly by David Grand developed treatment for PTSD called Brainspotting. The data of 22 clients from Germany and the U.S., who were treated with Brainspotting were analyzed. Clients' self-reports as well as evaluations by therapists were assessed. Within three BSP sessions the PTSD symptoms and related psychological disturbances were significantly reduced. According to the therapists' evaluations, the majority of clients benefited significantly. According to the clients' reports, in addition, negative cognitions related to the trauma were heavily reduced. The results of this pilot study suggest that with Brainspotting the treatment of PTSD could be extended with another potent intervention method.

Keywords: Brainspotting, Trauma, Therapy Efficacy Study, Pilot Study 1

## Introduction

The aim of this study is to evaluate the effectiveness of the newly developed method 'Brainspotting' in the treatment of clients with Post Traumatic Stress Disorder (PTSD). According to ICD-10 (F43.1) PTSD is a "delayed reaction to a stressful event or situation of longer or shorter duration, with exceptional threatening or with catastrophic extent that would cause almost everytime deep despair". Characteristic features of PTSD include re-experiencing (dreams, flashbacks, intrusions), avoidance (social withdrawal, loss of interest, isolation, alienation) and hyperarousal (insomnia, hypervigilance, excessive startle response, irritability, anxiety). The stressful events are classifiable into type I traumas, which are of short duration and usually only with one-time occurrence (natural disasters, accidents, technical disasters, criminal acts of violence) and/or type II traumas, which are characterized by a longer duration and in a repetitive sequence (hostage, torture, prisoner of war, repeated distinguishable sexual

and physical violence). PTSD is a relatively common disorder. The lifetime prevalence in population studies ranges from 1% in the older DSM-III studies and 12% in more recent studies (Helzer, Robins, & McEvoy, 1987; Schore, Vollmer & Tatum, 1989, Breslau, Davis, Andreski & Peterson, 1991; Resnick, Kilpatrick, Dansky & Saunders, 1993; Kessler, Sonnega, Bromet, Hughes & Nelson, 1995; Breslau et al, 1998. Cuffe et al, 1998. Perkonigg, Kessler, Storz & Wittchen, 2000). Over time it is often persistent and chronic. A study of adolescents and young adults in Germany resulted that 48% of the victims showed no significant reduction of PTSD symptoms over a period of three years set (Perkonigg et al., 2005). This verifies that a more effective method is needed in the treatment of PTSD to help the victims best in terms of their appealed remission.

Different methods for the treatment of PTSD are available. Some methods were modified for the treatment of trauma (eg [trauma-focused] Cognitive Behavioral Therapy, Exposure Therapy, Psychodynamic methods), others have been developed specifically for this purpose (eg, Eye Movement Desensitization and Reprocessing [EMDR; Shapiro, 2001], Narrative Exposure Therapy [NET; Schauer, Neuner & Elbert, 2011 and KIDNET; reputation et al, 2007], Somatic Experiencing [SE: Levine, 1997, Levine, 1998], Psychodynamic Imaginative Trauma Therapy [PITT; Reddemann, 2003]). EMDR was developed by Francine Shapiro (1989) and consists of 8 phases (Hofmann, 2005 Overrun, 2009). The core is phase 4, in which a stressful experience has to be processed. It comprises a bilateral stimulation, which can be achieved by various techniques (preferably rhythmic eye movements, alternating sounds, but also on the right and left ear alternately "fumble" with both hands). The effectiveness of EMDR in the treatment of PTSD was confirmed empirically (Barth, Stoffers & Bengel, 2003; Sack et al, 2001. Van Etten and Taylor, 1998) and in the guidelines of the International Society for Traumatic Stress (ISTSS) classified as effective and reliable (Foa, Keane, & Friedman, 2000). NET (Schauer, Neuner & Elbert, 2011) was developed within the field of new neuroscientific theories. Core element is the interpersonal sharing of the experience (recalled and newly actualized emotions, thoughts, facts and feelings). Available information is thereby retrieved out of the autobiographical memory (Neuner, Schauer & Elbert, 2009). However, as traumatized

people are often characterized by not being able to tell about the traumatic experience a professional therapist must help to overcome the speechlessness. The feasibility and effectiveness of NET could be proved in numerous studies (eg Bichescu, Neuner, Schauer & Elbert, 2007; Neuner et al, 2004; Neuner et al, 2008;. Pabst et al, 2012;. Schaal, Elbert & Neuner, 2008). It can be used for the treatment of survivors of traumatic experiences and can be assigned to different cultures and types of trauma. The integrative approach of Somatic Experiencing (SE, Levine, 1997) is body-oriented and based on biological functioning. The focus is held on biological residues of the trauma as well as on the reflexive and defensive manner, with which the body responds to threat and fear. Levine describes PTSD as resulting from an incomplete defense-response – the cross-genre survival strategy. Objectives of SE are therefore on the one hand affect regulation to certain stimuli, as well as the reduction of excessive and in the present inappropriate reactions of the nervous system. On the other hand, the restructuring of inappropriate cognitive interpretations or reviews. Initial studies show promising results in the treatment of persons with trauma experiences (Leitch, 2007; Leitch, VanSlyke & Allen, 2009). In addition to psychotherapy the pharmacotherapy may be indexed for the treatment of PTSD. Serotonin re-uptake inhibitors (SSRIs) such as Paroxetine are empirically well studied (Marshall et al, 2001, 2006; Stein et al, 2003; Tucker et al, 2003). Treatment of associated symptoms may be added. A presentation of pharmaco-therapy in PTSD and related efficacy studies are provided by Kampfhammer (2011).

Cognitive behavioral therapies and other psychological techniques usually take 30-40 sessions in a period of 6-9 months (Benkert, Hautzinger & Graf-Morgenstern, 2008). With Brainspotting a method is developed that should lead to a reduction of symptoms after 1-3 sessions. Brainspotting builds on EMDR and SE (described above), but is also strongly interwoven with neurophysiology (Corrigan & Grand, 2013). Brainspotting defines itself as a neurophysiological tool in the treatment of traumatic events by identifying the neurophysiological sources of emotional or physical pain, trauma, dissociation and a variety of other symptoms, by processing them through and by releasing the emotional charge.

This study will examine, whether Brainspotting is suitable for the treatment of PTSD. Effects on the PTSD symptoms and additionally on the mental impairment are considered. Besides a client's self-assessment the evaluation of the therapist is to be used.

## **2. Methodology**

### **2.1 Design and sample**

The data for this multicenter longitudinal study were collected by independent psychotherapists in the U.S. and in Germany. The therapists were previously instructed – in written advices and/or verbally. During the treatment a set and fixed protocol had to be followed by the therapists. The study was reviewed and approved by an ethics committee of the University of Bielefeld. Treatment and data collection was performed by seven experienced trauma therapists. Data were collected both, before the first therapy session, and after the third treatment session. The sample consists of 22 consecutive clients, who were treated during the course of the years 2009 through 2012. The following inclusion criteria were established: a) It is an adult clients aged 18 years and b) the clients have experienced either a traumatic situation and/or are suffering from post-traumatic stress disorder or an acute stress reaction, and c) the client gives his written consent to participate in the study. The client was excluded from the study, if the treatment has had included more than probatory sessions.

### **2.2 The treatment method Brainspotting**

After a detailed medical history and probatory sessions the by David Grand developed therapy 'Brainspotting' (Grand, 2011) was applied to the client. Aim of this new psychotherapeutic approach is the most complete resolution of blocked arousal in the brain and body, which often goes back to traumatic experiences. While clients' slow

eye movements, either with two or one eye the so-called brainspots (brain = brain, spot = point, location, area, to spot = to explore, discover, tracking down) are identified. It is assumed that brainspots neurologically resonate to implicit memory contents and hidden experiences, what enables the client's brain to reprocess them. The affect is intended to be regulated within the therapeutic relationship and on the neurobiological level. Therefore Brainspotting is referred to as a "Dual Model of Affect Regulation" (Dual Attunement Model).

The methodological approach combines parts of various treatment methods such as the EMDR by Shapiro (2001) or Somatic Experiencing by Levine (1997). BSP is understood as an integrative model, since the integration of additional therapeutic approaches are required and/or welcomed.

The following steps are carried out at Brainspotting: firstly the client has to get into a state of "focused arousal". This as the result – eg. the response - to previous traumatic experiences and relating to their emotional or physical symptoms. The client rates the degree of the impact on the SUD scale (from "0" [no load] to "10"[maximum load] Wolpe, 1969) and the location of the highest physical activation inside of his body. The client, along with the therapist has to find the "natural brainspot" - that eye position where the eye movement tends automatically to. The therapist guides the eye movements of the client with a pointer and observes corresponding reflexive responses (eg, increased blinking, pupil dilation, eye twitches, sudden inhalation, twitching of the face, yawning, coughing, movements of a finger).

There have been developed several techniques for localization of "brainspots": for processing the "Inside Window" uses the client's "felt sense", the "Outside Window" utilizes a number of visible reflexes, which the client is not consciously aware of. When, by reflexes the "brainspot" is located, the movement of the pointer is stopped. While focussing and "gazing" onto the pointer, which holds and anchors the "brainspot" in the midbrain, the traumatic experience is re-processed. The client is invoked to watch and describe without criticism his internal sequential processing that comprises affects, memories, cognitions and especially body-sensations. This

introspection is named "focused mindfulness" because it resembles a meditative state, but is performed in a state of "focused activation of implicit memory content". The process is repeated until the SUD ideally reaches a value of 0 and the client does not perceive any more discomfort. Subsequently, the "squeezing the lemon" follows. Here, the client is instructed to increase as much as possible the degree of the SUD. Again the arousal in the body is to be located and the inner processing to be observed, while gazing to the brainspot, until the client senses no more discomfort. All possible charge is to be resolved so that no residual activation is kept inside the body. In the last step - the expansion phase - the client is asked to focus his attention onto the original "highest physical activation" and no stress should be perceptible.

The processing is done with soft bilateral music sounds, heard via headset, which has an activating effect on the neuro-visual and auditory neuro system.

For the present study, a standardized protocol for the 3 Brainspotting sessions was designed, which follows the steps described above (this protocol can be obtained from the authors). The protocol also set that Brainspotting is implemented by "Inside Window" and with both eyes. Generally Brainspotting is understood as an integrative model, which can be used in combination with any clinical therapeutic approach (Grand, 2001). Because Brainspotting seems to be so clinical-technical (Peer, 2011) it is to note that it should be embedded in a psychodynamic relational context. For more information on the procedure of Brainspotting see Grand (2011), Peer (2011) and Corrigan and Grand (2013).

### **2.3 Instruments**

For the detection of PTSD and the severity of PTSD symptoms, the "Posttraumatic Diagnostic Scale" (PDS, Foa, Cashman, Jaycox & Perry, 1997; Ehlers, Steep, Winter & Foa, 1996) was used. The scale includes 49 items, 11 specific categories and a residual open category. The number of traumatic events that were experienced or observed, are to be indicated. After the most disturbing event of the last month is named, questions regarding this event follow. For the English version the internal

consistency of the total symptom severity is at .92, the scale for re-experiencing at .78, the scale of avoidance at .84 and the scale of hyperarousal at .84. The test-retest reliability is good ( $r = .83$ , Total Symptom Severity). A kappa of .65 between the PDS and the SCID has been demonstrated (Foa, Cashman, Jaycox & Perry, 1997). The reliability and validity of the German and Spanish version is satisfactory (Ehlers, Steep, Winter & Foa et al. 1996, Novy, Stanley, Averill & Daza, 2001).

*Additional psychological impairments* were determined by the "Hospital Anxiety and Depression Scale" (HADS, Zigmond & Snaith, 1983). The scale is based on self-assessments and consists of 14 items. The questionnaire covers two dimensions of different content, namely the anxiety sub-scale (HADS-A) and the depression sub-scale (HADS-D), each with 7 items. The responses are estimated on a four-point scale (eg, 'not at all', 'sometimes', 'often', 'almost always'). The questionnaire showed good internal consistency with Cronbach's Alpha values of .68 to .93 for HADS-A, and from .67 to .90 for HADS-D. Correlations between the HADS and other commonly used questionnaires are between .49 and .83 (Bjelland, Dahl, Haug & Neckelmann Tangen, 2002). In the German and the Spanish version we find a satisfying reliability and validity as well (Herrmann-Lingen, Buss & Snaith, 1995; Rico, Restrepo & Molina, 2005).

The treatment effect was determined using the "*Clinical Global Impressions*". Originally, this questionnaire is composed of 3 items asking for: seriousness of the disorder, general assessment of the individual change, and indices of effectiveness. For our study, only the change with respect to the severity of the disorder was queried. The therapist evaluated to what extent the disorder has improved or worsened compared to the pre-test. The assessment was carried out on a 7-point scale from 1 = significant improvement to 7 = significant deterioration - on the background of the therapist's experience with this form of the disorder (Guy & Bonato, 1970). The validity is assessed as satisfactory (Kessler, Grond & Schaaf, 1991).

*Subjective Unit of Distress Scale (SUDS)*. The SUDS was developed in 1958 by the behavioral psychologist Joseph Wolpe and is part of the set EMDR protocol by Shapiro. There, the client determines the degree of emotional stress, which resonates with the specific trauma experience (Edmond, Rubin & Wambach, 1999). At first, the client has to imagine the worst part of the memory, which he wants to work on along with a negative self-assessment referring to this. Then resulting emotions are to be determined. Wolpe's scale is a continuum from 0 (no stress) to 10 (maximum load) on which the client can evaluate the intensity of the by him perceived distress level (Wolpe, 1958). Data about validity of the SUDS can be found in Thyer, Papsdorf, Davis and Vellecorsa (1984). The SUDS was conducted at the beginning of the first trauma therapy session and at the end after the first three trauma therapy sessions.

#### *Additional information about the clients*

The data included gender, date of birth, family status, ethnic background (information provided by the client), level of intelligence and education, socioeconomic status, medication, traumatic events, moment of the trauma experience and ICD-10 diagnoses of the client (information provided by the therapist).

## **2.4 Data analysis**

The statistical analysis of the data was performed using the statistical software package SPSS/PC (version 20.0). Descriptive statistics (percentages, means, standard deviations) were used to describe the sample with respect to demographic variables. Comparisons were calculated using t-test when comparing two groups and by means of multivariate tests when comparing three or more groups. At the scales of the PDS and the HADS missing values were added by the method of Expectation Maximization (EM). However, a supplement was only made when at most 2 items per questionnaire were missing. Valid data of 22 clients (or 21 clients for PDS at posttest) were available.

### 3. Results

#### 3.1 Client characteristics and trauma experience

Information on socio-demographic data, intake of medication, trauma experience and the diagnoses are shown in Table 1. Clients specified the following events as most stressful traumatic experience: more than a third of the clients (38%) experienced a traumatic event, which was not explicitly listed (emotional, verbal and/or the psychological abuse by family members, kidnapping, car accident, separation from husband, career setbacks together with difficult childhood experiences, insult/humiliation by acquaintances, loss of family members, friends, and pets), almost a quarter of the clients (24%) experienced a serious accident, fire or explosion, and each of 14% experienced a violent or sexual assault by someone out of the circle of family or friends. Each person of 5% had a combat mission in the war/ stay in the war-zone or endured a sexual assault by a stranger. None of the clients indicated as "most distressing" natural disaster, a violent attack by a stranger, sexual contact under the age of 18 years with a person who was at least five years older, imprisonment, torture or a life-threatening illness. For nearly half of those affected (48%) the trauma already was more than 3 years in the past, a quarter (29%) of the clients experienced the trauma 3 months to 3 years ago. For nearly a quarter (24%) the experience was less than 3 months ago. In addition to the worst traumatic experience one third reported about another traumatic experience, almost a quarter (24%) about two more, 10.0% about three more, 5.0% about more than seven and 24% about no other traumatic experience. All clients indicated that they either were physically hurt or someone else was physically injured, thought that their life was in danger, thought that another person's life was in danger, that they felt helpless and/or were afraid or felt horror/ despair. Two clients confirmed all variables above[1].

Table 1 Socio-demographics and Diagnosen.doc

- Table 1 Socio-demographic characteristics and diagnoses –

### **3.2 PTSD symptoms and additional psychological impairments**

In all three areas of PTSD (re-experiencing, Avoidance/Numbing, hyperarousal) a significant reduction of symptoms from pre- to post-test are noticeable (Table 2). The largest effects were ( $d_z = .72$ ) achieved for the scale re-experiencing. Overall, an improvement in less severity of PTSD symptoms (PDS Total Score) was achieved. In the period between pre-and post-test the values for anxiety and depression decreased significantly.

Table 2 Symptomatik.doc

- Table 2 PTSD and comorbid symptoms -

### **3.3 Global improvement and Subjective Unit of Distress**

By the opinion of the therapists over 90% of the clients improved after 3 sessions moderately or significantly with respect to their disturbances (Figure 1). In only one person a minimal deterioration of the symptoms was noted. According to the clients, the degree of emotional stress was reduced significantly from the first to the third session ( $F = 50.77$ ,  $df = 3$ ,  $p < .001$ ). The values were significantly different (Figure 2) - similarly from the beginning to the end of the first session ( $t = 6.77$ ,  $df = 20$ ,  $p < .001$ ) as from the end of the first to the end of the third session ( $t = 3.01$ ,  $df = 20$ ,  $p < .01$ ).

Figure 1 Global Verbesserung.doc

- Figure 1 Global improvement post-test -

- Figure 2 SUDS.doc - Figure 2 SUDS -

## **4. Discussion**

To the knowledge of the authors, the present study is currently the only published study on the effectiveness of Brainspotting for clients with Posttraumatic Stress Disorder. The short-term effects of Brainspotting on the severity of the symptoms - also with regard to additional mental impairments - were examined.

According to the clients, PTSD symptoms and the accompanying anxiety and depression symptoms were both reduced during the course of three therapy sessions. After a general assessment by the therapists, moderate to significant decrease of symptoms was observed in the majority of clients. Also, referring to the self-assessment scale (SUDS), Brainspotting led to significant improvement immediately after having processed the acute trauma, which had initiated the treatment. By treatment with Brainspotting the subjectively felt emotional distress by negative trauma-related cognitions could be reduced within three therapy sessions.

In assessing the results, however, methodological limitations are to be noticed. Due to the hitherto rather small sample, the significance of the study is limited. However, it must be remembered that it is a newly developed therapeutic approach, which has to be evaluated only at clients with PTSD. Therefore all clients without PTSD were excluded from the study, even if they were in treatment due to a traumatic experience.

After it became clear that Brainspotting was increasingly applied in South American countries and Spain, the questionnaires were translated into Spanish language. This may promise an increased number of participants for the following studies.

In this study, only the short term effects of Brainspotting were examined. Thus, no statement can be made about whether the effects persist long-term. However, a review of the effects after a period of 6 months is planned.

In addition, there could not be acquired an adequate comparison group. Therefore, comparisons to other treatment methods are not possible, and spontaneous remission can not be excluded. A comparative study that contrasts the approaches Brainspotting therapy versus EMDR has to be forced.

It should also be noted that due to the small number of cases so far only certain types of trauma were under observation, such as sexual assault or serious accident. A generalization to other types of trauma, such as natural disasters, torture and imprisonment, therefore, can only be done previously and in a limited way.

In addition, there could be a threat to internal validity, because this treatment method is newly developed and enthusiasm on the part of the therapist may be present. This could be reflected *directly* in the estimations of the therapist. On the other hand - through a higher motivation of the therapist - a reduction of symptoms could be achieved *indirectly*. Thus, the results would be distorted in a positive direction. However, it was decided for this study not to refer to the clients of the developer himself.

## **Summary**

In conclusion, despite the methodological difficulties discussed, it should be noted that the results of this study indicate evidence that Brainspotting in the treatment of PTSD leads to positive effects. From these findings it can be deduced that Brainspotting is a potent alternative to conventional forms of therapy in the treatment of PTSD, particularly, because the symptoms of the clients decrease after a short therapeutic exposure.

Further studies, which compare eg Brainspotting with other treatment methods, which provide a longer therapy or follow-up period and include clients with different traumatic experiences are needed. Only then empirically more secured and differentiated efficacy results about Brainspotting can be obtained.

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1 For a client, the data related to the traumatic experience are missing.

Acknowledgments:

We thank all therapists and clients, who participated in this study.

Comments:

The Institute of Trauma Therapy in Berlin under the direction of Oliver offers regular seminars on Brainspotting.

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