Does acupressure potentiate the effect of imagery exposure on posttraumatic stress disorder?

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Hovedoppgave ved Psykologisk Institutt

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Abstract

Author: Trine Elverum

Title: Does acupressure potentiate the effect of imagery exposure on posttraumatic stress disorder?

Supervisor: Asle Hoffart, Professor.

Background: PTSD is a disease on which there has been conducted massive research, studies for the most part showing that effective treatment for PTSD is an ordeal for patient and therapist alike. Prolonged Exposure (PE) is an established method in the treatment of PTSD. As it is a challenging treatment for the patients to endure, studies combining PE with other treatment methods in order to investigate if effect, recovery speed or emotional strains could be influenced to the better have been made. The studies have mostly concluded that PE alone, or the other treatment alone, was better than any combination, so the search for improved treatments have continued.

Aim of the study: Based on personal experience, in a private clinic, that Thought Field Therapy (TFT) has led to what some would call miraculous disappearance of PTSD symptoms, the author of this thesis set out to investigate whether the implementation of TFT during the course of manual based Prolonged Exposure (PE) would potentiate the effect of PE on PTSD patients in an outpatient clinic in Norway. Trying to combine the well documented effect of PE with what some claim is an element of speedy recovery in TFT.

Method: An independent research project at an outpatient clinic connected to the regional hospital in Tönsberg, Norway, was conducted. The original design was thought to include 15 PTSD-patients, but only 13 patients were eligible for the study. 3 withdrew prior to treatment, one withdrew in session 7. A total of nine participants completed 10 treatments of Prolonged Exposure according to the PE manual. The patient withdrawing from the study was included in the analysis. The original design meant for 5 patients to receive TFT in session #5, 5 patients in session #6 and the last 5 patients in session #7. The actual distribution turned out: 5 patients in session 5 (including the drop-out), 3 patients in session 6 and 2 patients in session 7. Of the 10 patients included in analysis, only 2 were male. Data was gathered during the winter of 2010/2011 and treatment was conducted at the outpatient clinic situated at the local

hospital. Treatment was conducted according to the treatment protocols of both therapies unless otherwise specified.

Results: Mixed model analysis was conducted on the end SUD minus maximum SUD scores, using session and introduction of TFT as independent variables. Both session and TFT showed significant effect. Mixed model analysis also show significant effect of session on mean SUD scores between sessions and a significant effect of session on PSS-SR scores across sessions. The introduction of TFT did not affect the level or slope of PSS-SR across sessions. Paired samples t-test show statistically significant mean score reduction from pre-scores to post-scores on BDI, SCL-90R and PSS-SR for the group as a whole (N=10) with *99% confidence interval.

Conclusion: The results indicate that TFT increase within session habituation, which Emotional Processing Theory claim is a prerequisite for reduction of PTSD symptoms, but TFT does increase between session habituation. There is however significant between session habituation not directly related to TFT. The results are discussed on the background of established PTSD theory.

Sammendrag

Forfatter: Trine Elverum

Tittel: Does acupressure potentiate the effect of imagery exposure on posttraumatic stress disorder?

Veileder: Asle Hoffart, Professor.

Bakgrunn: PTSD er en lidelse som har vært gjenstand for mange studier. Disse har i hovedsak vist at effectiv traumebehandling kan være en prøvelse både for pasient og terapeut. Forlenget Ekspoenring (PE) er en anerkjent metode for behandling av PTSD. Siden PE er en krevende behandling for pasienter å gjennomgå, er det gjort mange studier på ulike kombinasjoner av PE og andre metoder for å se om effekten av PE, bedringsraten eller de emosjonelle prøvelsene kunne påvirkes til det bedre. De fleste av disse studiene har konkludert at PE alene, eller andre validerte behandlingsmåter alene, var bedre enn noen utprøvd kombinasjon. Søket etter forbedrede behandlingsmetoder har følgelig fortsatt.

Mål med studien: Basert på erfaring fra privat praksis, der Tankefeltterapi (TFT) har ført til hva mange ville kalle mirakuløs bedring av PTSD symptomer, ønsket forfatteren av denne hovedoppgaven å undersøke om det å tilføre TFT til behandlingsprosedyren i den manualbaserte eksponeringsterapien PE, ville styrke effekten av PE på PTSD pasienter ved en poliklinikk i Norge. På den måten ville hun prøve å kombinere den veldokumenterte effekten av PE med det enkelte hevder er et element av snarlig bedring forbundet med TFT.

Metode: Det ble gjennomført et uavhengig forskningsprosjekt ved en poliklinikk tilknyttet Sykehuset i Vestfold. Det opprinnelige designet var ment å inkludere 15 PTSD-pasienter, men bare 13 pasienter viste seg å være egnet for studien. 3 av disse trakk seg før behandlingsopppstart, den siste trakk seg i time 7. Total fullførte 9 personer de 10 behandlingene PE i henhold til behandlingsmanualen. Pasienten som trakk seg i 7. time ble inkludert i analysene. I det opprinnelige designet skulle 5 pasienter motta TFT i time 5, 5 pasienter i time 6 og 5 pasienter i time 7. Den endelige fordelingen ble: 5 pasienter i time 5 (inkludert den som ikke fullførte), 3 pasienter i time 6 og 2 pasienter i time 7. Av de 10 pasientene som ble inkludert i analysen var bare 2 menn. Data ble innsamlet i løpet av vinteren 2010/2011 og behandlingen ble utført på poliklinikken på sykehuset. Behandlingen

ble utført i henhold til behandlingsmanualene for begge terapiene, med mindre annet er oppgitt.

Resultater: Mixed model analyse ble gjennomført på slutt SUD minus maksimum SUD skårer, med time og startpunkt for TFT som uavhengige variabler. Både time og startpunkt TFT viste signifikant effekt. Mixed model analyse viste også signifikant effekt av time på gjennomsnittlig SUD skårer mellom behandling og signifikant effekt av time på PSS-SR skårer på tvers av behandlingstimer. Innføringstidspunktet for TFT påvirket hverken nivå eller regresjonslinjen til PSS-SR på tvers av time. Paret t-test viser signifikant reduksjon i gjennomsnittskåre før og etter behandling på BDI, SCL-90R and PSS-SR for gruppen som helhet (N=10), med konfidensintervall *99%.

Konklusjon: Resultatene indikerer at TFT øker habituering under eksponeringsbehandling, noe emosjonell prosesseringsteori hevder er en forutsetning for reduksjon i PTSD symptomer, men TFT øker ikke habituering mellom behandlinger. Det foregår imidlertid en habituering også mellom behandlingene som ikke direkte kan relateres til TFT. Resultatene diskuteres på bakgrunn av PTSD teori.

Preface and acknowledgements

PTSD is a psychiatric diagnosis which has fascinated me for many years. On the one hand it can be acquired based on an incident so limited in time and space that it sometimes occupies only minutes of a patient's life, on the other hand it can develop into something so extensive that it devours and destroys an entire life; the patients thoughts, actions, dreams, sleep, appetite and social abilities might be influenced and changed through the effects of PTSD. The first PTSD patient I encountered after I started learning Thought Field Therapy (TFT), was a man who hadn`t had a normal night's consecutive sleep in more than 35 years due to intrusive nightmares of a terrible accident he had been involved in when he was young. When he after our therapy sessions reported how he started sleeping whole nights without nightmares and abrupt sleep, and how happy he was to be rid of his PTSD symptoms, my interest in helping this group of patients was awakened.

I want to thank Northern Vestfold District Psychiatric Center (NVDPS), especially the group therapy unit and its leaders, Anne Røise and Kenneth Kvisle, and their trauma specialist, Ulrike Schmidt, for believing in my project and trusting me with your patients. Thank you for letting me use your premises, computers and facilitations and supporting me with material for my study. I want to thank the devoted staff members of the group unit for taking me into your collegial fellowship, making me feel at home and supporting me along the way. Thanks to all the subjects participating in the actual treatment. Your willingness to share your personal stories and the trust you showed me during strenuous sessions of imaginary exposure is much appreciated.

Asle Hoffart, professor at Modum Bad and my supervisor during this project: Thank you for following my way through a long and winding road to this final version of my project. Your calm personality and clear head has been a great guide and support. Tomas Formo Langkaas, psychologist at Modum Bad, has also been a great support. Even though he has had his hands full with his own PhD project, he has never rejected my cries for help and always been willing to lend both ears and hands to my project.

Last but not least: My devoted husband, who has put his own ambitions on halt to support me in my quest to become a psychologist: Thank you for being more than I could hope for! My bright and patient son, who has waited for Mummy to be more available: Thank you for letting me have time – I am all yours now and I can't wait to go to Legoland with you ☺

Table of content

1 Introduction

1.1 Outline

This thesis presents Prolonged Exposure (PE), an evidence based treatment for PTSD (Foa, Hembree, & Rothbaum, 2007), in combination with Thought Field Therapy (TFT), an acupressure technique (Callahan, Callahan, & Trubo, 2002) with very limited research, based on a pilot study conducted on patients from two outpatient clinics in Norway. Initially the thesis provides the reader with a description of the diagnosis and epidemiology, then follows a general description of the gold standard criteria for evaluation of PTSD studies (Foa & Meadows, 1997), which leads up to the selection of treatment methods in this study and a presentation of these. Research questions will be presented before methods, design and results. The discussion will present a summary of the major findings along with a broader discussion related to PE research and theory. The thesis will end with the many limitations of this study and some considerations regarding future directions.

1.2 Historical background

PTSD is a debilitating disorder that, although it clearly existed earlier, only came to be part of modern psychiatric nomenclature since 1980, when it was taken into the Diagnostic and statistical manual of mental disorders, DSM-III (APA, 1980). Prior to this, Kraeplin used the term Schreckneurose (Kraeplin, 1904) when describing symptoms emerging after serious accidents and injuries, whereas DSM-I operated with a diagnosis labeled “gross stress reaction” and DSM-II totally ignored the category (Friedman, Keane, & Resick, 2007).

DSM-IV has divided the diagnostic symptoms of PTSD into three clusters, in addition to the main criteria of being exposed to a traumatic event, where the individual experienced a) actual or perceived threat of death, bodily harm or threat to physical integrity to self or others, and b) reactions involving intense fear, helplessness or horror (APA, 1994). These additional symptom clusters are normally labeled: B) The re-experiencing criteria, C) The avoidance and numbing criteria and D) The Hyper arousal criteria (APA, 2001).

1.3 Diagnostic criteria

The clients described in this study have all been diagnosed with the diagnosis F43.1 Post-Traumatic Stress Disorder, in ICD-10 (ICD-10, 1992). This diagnosis differs from DSM-IV, PTSD, 309.81 to an extent where Peters, Slade and Andrews (1999) show that 59 out of 94 PTSD-patients did fulfill the criteria for ICD-10 PTSD, but not for DSM-IV PTSD (Peters, Slade, & Andrews, 1999). In the performed study, these differences are sought avoided by interviewing the participants with the Standardized Trauma Interview (Foa, et al., 2007) and rating them on PSS-SR (Foa, Riggs, Dancu, & Rothbaum, 1993) on a regular basis. However, the differences in diagnostic criteria should be kept in mind as most of the references in this report rely on the DSM-IV criteria, whereas the sample is taken from Norwegian outpatient populations and thus diagnosed according to the criteria in ICD-10.

1.4 Epidemiology

The National Comorbidity Survey Report, published 2005 in the USA, estimated the lifetime prevalence of PTSD among adult Americans at 6.8% (NCS, 2005). The lifetime prevalence in Norway has, to my findings, not been subject to studies. However, one study (Frans, Rimmo, Aberg, & Fredrikson, 2005) found the prevalence in Sweden to be 5,6% in a sample representative of the Swedish population, which makes it reasonable to assume that the number for Norway would be fairly equal. Individuals suffering from undiagnosed PTSD are often misdiagnosed with anxiety or depression, which makes it likely that the number is actually higher (Van Zyl, Oosthuizen, & Seedat, 2008).

Research has shown that there are a number of risk factors for developing PTSD after experiencing a PTE (Potentially Traumatic Event), as found in a meta analysis including 77 articles (Brewin, Andrews, & Valentine, 2000). Some of these risk factors are: gender (females are more prone to developing PTSD than men); educational level and intellectual abilities (risk minimizes with increased level of education and increases if intellect is impaired); social support (low support and negative social environment increase risk); and previous psychiatric history. All factors show rather small, but reliable effects.

PTSD-diagnosed patients generally have very low quality of life and show poor functioning across several modalities. Kessler (Kessler, 2000), reporting from unpublished data from NCS 1995, list PTSD patients with 40% higher risk of high school or college

failure, 30% higher odds of becoming teenage parents, 60% higher risk of unstable marriage and, as much as, 150% higher risk of unemployment at the time of the interview compared to individuals without a PTSD diagnosis. Kessler also reports that PTSD patients not only have increased risk of comorbid mental disorders and abuse disorders, but that these patients diminish such additional risk if their PTSD is treated. This suggests that the patients' additional vulnerability appears to be associated with their PTSD rather than being one of the predisposing factors for developing PTSD. In another article Kessler and colleagues (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995) argue for what they call a bidirectional link between PTSD and comorbid disorders. They address the fact that PTSD often follows after one initial DSM-diagnosis, for then again to be followed by one or more additional diagnoses.

That PTSD patients generally have higher risk of both attempting and committing suicide than other anxiety disorders has been shown in several studies (Bruce, 2010; Kessler, 2000) and it is a sad fact that not only the patient himself, but also his family suffer from the impact of PTSD. Galovski & Lyons (2004) point specifically to the negative effects causing anger and violence (Galovski & Lyons, 2004).

Several studies have investigated war veterans and how their lives have been affected by their PTSD symptoms (Bruce, 2010; Smith, Schnurr, & Rosenheck, 2005). Smith et al. (2005) found the symptoms to be so severe to the sufferer that even minor symptom reduction could make the difference between unemployment and part time employment, or part time employment and full time. Any symptom reduction could thus make a difference with this group of patients.

1.5 Simple or complex PTSD

In the USA, where a diagnosis, mainly due to insurance payments, might mean acceptable living conditions and not poverty, expanding the PTSD diagnosis has been considered. Some have voiced the need for one or more diagnoses independent of perceived life threat, as large groups of people are totally incapacitated by PTSD-like symptoms after accidents, tough divorces, severe illness or death in the family or other severe life stressors, without qualifying for a traditional PTSD. George Bonanno and a team of other researchers (Bonanno et al., 2007) have focused on complicated grief (CG) and conclude that there indeed is support for a complicated grief construct qualitatively different from depression or PTSD,

which within governing nosology are the two diagnosis most often assigned to individuals suffering from the symptoms encompassed in the construct CG. For children and adolescents, van der Kolk has been one of the most eager spokespersons for a diagnosis called Developmental Trauma Disorder. This diagnosis is restricted to children and adolescents clearly suffering from PTSD-related symptoms due to traumatizing childhood experiences, without meeting the symptoms required for an adult PTSD diagnosis (van der Kolk, 2005).

Also within the adult population today's PTSD diagnosis in many cases come short. Some patients seem to suffer from a condition more comprehensive than PTSD, often accumulated through traumas stretching over long periods of time, which could be termed complex PTSD, but which was included in DSM-IV TR as Disorder of Extreme Stress Not Otherwise Specified, DESNOS, (Herman, 1992; Kessler, 2000). Some have argued that the simple PTSD, being limited to a single traumatic incident in an otherwise well regulated life would be easier to treat (Ide & Paez, 2000) than complex PTSD. This was, however, refuted in one study by Taylor and colleagues (2006). They used cluster analysis to sort their subjects into groups of simple and complex PTSD before treating them with PE, Relaxation training or EMDR and found no difference in symptom reduction in the two groups (Taylor, Asmundson, & Carleton, 2006). PE has showed limited effect on individuals suffering from more complex variations of PTSD in other research (Lombardo & Gray, 2005) and some argue that one of the major components being left untreated with PE is shame. Based on this Ashwin Budden (Budden, 2009) argues that a revised PTSD diagnosis in DSM-V must include shame as one of the main criteria and points out that the diagnosis in DSM-IV is void of accepting the importance of the social self. Discussing how accurate it is to lump PTSD, complex PTSD and reactions to collectively experienced mass trauma like genocide, Ehrenreich suggests that it could be compared to stating that ice, steam and running water are identical because they originate from the same substance (Ehrenreich, 2003).

There are good arguments for a revision of the nomenclature within the complicated field of trauma and bereavement, but that discussion will not be carried further here. Sufficient is to note that the history of trauma and PTSD nomenclature and nosology still is rather young and most certainly not yet fixed, and that the question of traumatized individuals profiting from different treatments based on what kind of trauma caused their PTSD is very interesting.

1.6 Evidence based therapies for PTSD

Because the consequences of PTSD are so severe to the individual and his surroundings, often affecting not only the individual's health and ability to cope socially, but also his ability to function in work settings and contribute to society, much effort has been done to study both the disorder and ways to remedy its consequences. 31 years after the official entry into the realm of diagnosis, PTSD could claim the position of one of the psychiatric diagnoses most researched and least resolved.

Edna Foa has been a leading figure in establishing standards for PTSD research and outlined together with Elizabeth Meadows what they termed the "gold standard" to evaluate the research methods in PTSD studies (Foa & Meadows, 1997). These standards include the following 6 parameters:

1) The symptoms must be clearly defined and a threshold for entering treatment should be identified.

2) The employed measures must be both valid and reliable.

3) The evaluators of treatment outcome should be independent.

4) Trained assessors must evaluate the treatment.

5) The treatment must be manualized, replicable and specific.

6) Subjects should be randomized to conditions and therapists.

7) Treatment adherence ratings must be conducted.

In 2008 the Department of Veterans Affairs commissioned a thorough report assessing the scientific evidence on PTSD treatments for war veterans (IOM, 2008). However, the committee found that there were so few studies conducted in veteran populations that they ended up basing their report on treatment efficacy on PTSD symptoms in more general populations, thus their conclusions ended up with a broader scope than the veteran-specific the committee set out to identify. The committee established that exposure therapies were the only treatments with sufficient evidence for the committee to conclude their efficacy in the treatment of PTSD (IOM, 2008). Neither Cognitive Restructuring (CR), nor Eye Movement

Desensitization and Reprocessing Therapy (EMDR) nor Coping Skills Training (CST) were found to have sufficient evidence of efficacy on PTSD. One limitation to this conclusion is that the committee chose to group studies using exposure alone and studies combining exposure with cognitive behavioral techniques (CBT), like cognitive restructuring or different coping skills (like breathing techniques or relaxation techniques). To the defense of the committee it should however be stressed that most exposure techniques are administered with elements historically associated with CBT, although exposure techniques in research tend to tone this connection down.

The most effective treatments for PTSD are trauma focused therapies (Bisson & Andrew, 2007) forcing the individual to re-experience the trauma through imagery, thus habituating the experience till it loses its emotional grip (Foa, et al., 2007) or retelling (Cohen, Deblinger, & Mannarino, 2005) and, in some cases, rescript the outcome (Arntz, Tiesema, & Kindt, 2007; Smucker, Weis, & Grunert, 2002). One fairly recent review of 33 studies, n=1717, (Bisson & Andrew, 2007) found the treatments most effective for PTSD to be: individual trauma focused cognitive-behavioral therapy (TFCBT) and eye movement desensitization and reprocessing (EMDR). The results were so convincing that the review concludes that EMDR and TFCBT always should be considered in individuals with PTSD.

Even though there are many effective treatments for PTSD, the number of successfully treated individuals rarely exceed 70% (Bradley, Greene, Russ, Dutra, & Westen, 2005) and the quest for improving the effective treatments already developed and invent new and, hopefully, even better treatments continue.

1.7 Selected treatments in this study

Trauma focused therapies are efficacious and well documented, but, for several reasons, not very commonly practiced. The main reason probably being that many patients find it hard to imagine enduring something they have struggled so hard to suppress and avoid. Another reason is that the method usually demands so much of the patient that it can be difficult to execute on non-resident patients. Many who commence trauma focused therapies

also drop out (Bradley, et al., 2005), due to its emotional strains. Hembree et al (Hembree et al., 2003) disputed the higher dropout rate in a study comparing PE to other cognitive behavioral treatment methods. Comparing 25 studies with PTSD patients they found the dropout rates to be 20.5% for PE, 22.1% for SIT and CT and 26.9% from treatments combining PE with other CBT components. Other researchers, however, show dropout rates with an average up to 38 % (Arntz, et al., 2007), so the numbers vary greatly.

Another factor contributing to the rather rare use of trauma focused therapies is therapist related. It is challenging for empathetic professionals with a drive to soothe and support to sit through the horrific experiences of some of the patients traumas without intervening actively during the imaginal reliving. Because trauma focus also demands much of the therapist herself, many therapists end up choosing methods which to them seem more humane to the patient and not so emotionally challenging to themselves (Arntz, et al., 2007; Cook, Schnurr, & Foa, 2004). Unfortunately these therapists' care and sensitivity persuade them to act contrary to evidence, proving trauma focus to be the best help for traumatized individuals, thus further effort is needed to ensure dissemination of these evidence based therapies (Cahill, Foa, Hembree, Marshall, & Nacash, 2006).

1.7.1 Prolonged Exposure

Prolonged Exposure is a technique developed over the last 20 odd years until it at present is the most comprehensive exposure treatment within the field of PTSD, and the trauma focused therapy with the best documented results (Foa, Keane, Friedman, & Cohen, 2009; Taylor et al., 2003). The researchers behind PE (Foa & Kozak, 1986; Foa, Steketee, & Rothbaum, 1989) were amongst the first to apply Lang's theory about anxiety nodes (Lang, 1979) specifically to PTSD, (Vasterling & Brewin, 2005) linking it to Exposure Therapy. Foa and colleagues see fear structures as interrelated representations of fear triggering stimuli, the fear responses the individual experiences facing these stimuli and the appraisals the individual builds around these stimuli. Activating a fear structure results in a chain reaction of arousal leading to physiological responses, cognitive reactions and fear induced behavioral responses. Foa's group of researchers proposed that the activation of the fear structure, as defined by Lang (Lang, 1977), was indeed essential for fear processing to occur. Their main interest has, however, been to measure that processing actually occurred in order to ensure that the right treatment was provided to the right patients. The solution was linking fear activation with

habituation measuring fear habituation, defined as response decrement, both within each session of exposure therapy and between each session. Successful treatment of fear relies on both activation of fear in session, habituation to the feared image in session and habituation to fear evoking stimuli between sessions (Foa & Kozak, 1986). What started out as a theory laying the grounds for treatment of anxiety, has since been developed by Foa and coworkers (Foa, et al., 1989) into a full PTSD theory. Emotional processing theory of PTSD is today one of the most comprehensive theories explaining PTSD.

As stated, one of the two basic premises underlying emotional processing theory is the assumption that anxiety disorders are the direct results of pathological fear structures in the patients' memories. The second basic premise of emotional processing theory is that the fear structure can be modified so that it no longer responds with fear responses when the patient is exposed to stimuli previously associated with fear. For this modification to take place the fear structure must be activated (the rationale for exposure) and the fear structure must receive information that the activating stimuli is not dangerous in itself, so that it can change the maladaptive information it has previously stored (the rationale for prolonging the fear triggering stimuli long enough for the fear structure to register that nothing life threatening actually happens).

In Prolonged Exposure, the treatment Foa and coworkers have developed from the premises of emotional processing theory, intentional in vivo exposure to situations the patient has learned to fear, even though they objectively are harmless, fulfills the conditions of these two basic premises. The same does imaginal exposure to the traumatic memories of the index trauma. The idea is that the patient will experience fear, but come to realize that this fear is not in itself dangerous and that it diminishes if the patient remains in the feared situation. Thus new information is gathered and will during the therapy session be encoded so it can alter the fear structure and mediate habituation to the feared stimulus.

Prolonged Exposure consists of 10 treatment sessions encompassing a) psychoeducational elements, like how the body commonly reacts to scary events and what happens when the body keeps re experiencing these scary events in flashbacks and dreams, b) mastering skills like breathing training and taking control over intrusive thoughts, c) in vivo exposure to situations the patient has started to avoid due to trauma related associations, and d) imaginal exposure to specific trauma memories in long and repeated sequences in the presence of the therapist.

Prolonged Exposure (PE) takes great care in explaining the rationale of the treatment to the patient and generally make the patient appreciate that the emotions and reactions he or she experiences are normal reactions to abnormal events, rather than abnormal reactions. The manual also stresses that these normal reactions in part help maintain and often feed the PTSD symptoms. After the first two sessions, when the rationale is explained and breathing technique taught, the exposure begins. In session the exposure is focused on imaginal exposure to trauma memories. Between sessions the focus is on in vivo exposure to feared, but harmless, situations the patient has started to avoid due to trauma related stress and anxiety. The imaginal exposure is also carried on into the period between sessions in that the patient gets the trauma reliving sequence on an audio tape to listen to on a daily basis at home.

After exposure in session, the therapist takes time to process the imaginal exposure with particular focus to any unhelpful trauma induced thoughts and beliefs the patient may hold on to, and which may preserve and increase the patient's level of distress (Foa, et al., 2007). The imaginal exposure will change over the sessions, from focus on the full trauma story to particular hot spots, defined as especially troublesome parts of the trauma story. Foa and colleagues argue that hot spots need repeated exposure for habituation to occur and identify hot spots by SUD ratings over 20 during the last few sessions. They report an expected decrease in SUD ratings from maximum SUD to about 20-30 by the beginning of sessions 5-6.

Both imaginal exposure and in vivo exposure will help the patient process the trauma emotionally as she faces, instead of avoids, both the memories and the associated situations or places connected with the trauma (Foa & Rothbaum, 1998). The aim of the treatment is that the patients experience that the feared and avoided stimuli do not kill them, but actually take on a more digestible form during the exposure procedures (Heimberg, 2002).

The theory Foa and Kozak proposed about fear extinction through habituation has been supported through many different studies of different kinds of fear (Grayson, Foa, & Steketee, 1986; Shadish, Cook, & Campbell, 2002; van Minnen & Hagenaars, 2002). Foa claimed early that in order for permanent habituation to be the end result after prolonged exposure, both within session and between session habituation were necessary (Foa, 1979) and stated that within session habituation had to be considered a prerequisite for between session habituation to be able to occur. This later claim was recently refuted by scientists who

studied 44 acrophobic students and found that the only component of emotional processing theory slightly supported was between session habituation, and that alone (Baker et al., 2010). In an article dealing specifically with Emotional Processing Theory and PTSD (Rauch & Foa, 2006), Foa discusses the divergent findings regarding within session habituation and in this article stresses the importance of *between* session habituation.

Critiques of PE challenge the therapy's demands on the individual to endure distress and anxiety provoking thoughts, images and situations. As a consequence some research has been conducted in order to investigate if PE could be ameliorated through for instance Stress Inoculation Training (SIT) (Foa et al., 1999) or Cognitive Restructuring (CR) (Foa et al., 2005) The results showed that both therapies in both studies were fairly equal in efficacy, but that combining them added nothing to the results obtained from each therapy alone. This has led some reserachers to claim that the combination of perceptual memory and conceptual memory need to be more in focus if relief of PTSD symptoms are to be successful (Arntz, et al., 2007).

1.7.2 TFT

Thought Field Therapy (TFT) was developed by the clinical psychologist Roger Callahan during mid 1980s and had by the mid 1990s become a manualized therapy with therapists in many countries (Callahan & Callahan, 1994). According to his own testimony both in books and during lectures (Callahan, et al., 2002), Callahan started searching for a method that could do for mental problems what he saw acupuncture do for many somatic problems. His search led him to Asian medicine, specifically the energy meridians. Callahan's story about Mary, the water phobic who instantly got cured for her very severe water phobia after a few taps under her eyes (Callahan, et al., 2002), is said to be the first incident when TFT was used to cure a mental problem. In his own testimony, Callahan was so inspired by this success that he introduced the tapping under the eyes to all his other phobic patients, alas with no luck. However, his interest was kindled and he reports methodically testing the energy meridians until he had assembled a sequence of tapping algorithms and named the method Thought Field Therapy. His methodical testing was based on kinesiology (Callahan & Callahan, 1994).

TFT is commonly counted as one of the pseudo sciences, although Diepold & Goldstein (Diepold & Goldstein, 2009, p. 91) came up with this definition:

“Thought field therapy can be defined as an integrated, meridian-based, mind-body-energy psychotherapy, which includes diagnostic and treatment procedures performed while the patient is thinking about his or her problem”.

The theoretical background for how and why TFT might achieve the results it proposes to achieve is still a bit unclear. Callahan originally based himself on quantum theory explaining how the emotional stress was caused by, what he termed, *perturbations* (“the proposed entity in the thought field that constitutes the most basic and fundamental cause of all the negative emotions emotions” (Callahan & Callan, 1994)) in the suffering individual’s specific thought fields. The student therapist conducting this study considers what Callahan calls perturbations to be automated emotional responses that can be activated by any kind of trigger (sensory or memory based) the patient has linked to it through any mechanism of learning (see Document 2, Appendix C).

TFT, it is a method with much in common with EMDR (Shapiro, 1995) (for instance the use of saccadic eye movements during imaginal exposure), conditioning theory (Kolb, 1987) (replacing a conditioned fear reaction with an impulse to tap the skin) and exposure theories (Fairbank & Keane, 1982) (in that the dreaded situation is relived or the feared object visualized through imaginary exposure).

Exactly what is the working mechanism in TFT is still very unclear. If the energy meridians do exist, it is a problem that they have not yet been identified and proven. Callahan (Callahan, et al., 2002) claim it is important to tap the specific points he has identified and suppose there to be a difference between tapping specified acupressure points and tapping other points on the body. Recently there is published some possible support for acupressure in a Chinese study, where Hsiu, Hsu, Chen & Hsu (2010) showed that acupressure points exposed to pressure improved microcirculatory blood-flow perfusion, whereas the same amount of pressure exercised at points not defined as acupressure points did not show such increase (Hsiu, Hsu, Chen, Hsu, & 2010). The authors do claim that their findings could have an impact for acupressure. This is, however, still very premature and science is a long way from having established such mechanisms beyond doubt.

With some emotional problems, like addiction, there allegedly is a difference in actual improvement between different algorithms (see explanation under 2.6.2 Procedure Thought Field Therapy) based on anecdotal case studies in clinic, but this has not been tested. Such differences experienced in clinic could, of course, be credited to therapist expectations.

1.7.3 Rationale for the combination PE+TFT

This presented study was conducted based on the author's experience that TFT in some cases not only appeared to ease anxiety evoked by unpleasant images and neutralize these images so they no longer seemed to evoke the same fear, but to accomplish this rather quickly and apparently with little suffering for the client. These experiences are in line with other practitioners experience with trauma treatment using TFT (Diepold & Goldstein, 2009; Elverum, 2007). However there has been little published research conducted on TFT. During my search through PTSD literature I found that Eye Movement Desensitization and Reprocessing, EMDR (Shapiro, 1995, 2001), had some evidence within PTSD research (Bisson et al., 2007). Since PE in many cases seemed so difficult for both the patients and the therapists to endure, both PE and EMDR had such promising results, and I am trained in TFT, which is a technique with many elements in common with EMDR, I started working with the idea of adding TFT to PE in order to investigate whether or not the implementation of TFT during the course of manual based PE would potentiate the effect of PE on PTSD patients in an outpatient clinic in Norway.

Moser, Cahill & Foa, (2010) recently showed that a group of 27 PTSD-patients with high scores both on trauma related cognitions and general PTSD-symptoms, actually had less effect of PE (prolonged exposure) in combination with CR (cognitive restructuring), than the control group, with compatible symptomology, which only received PE. This might indicate that this group of patients benefitted more from re experiencing their trauma memories in safe surroundings and the support of a professional, than they did from cognitive restructuring. Foa has also previously shown that individuals with very high levels of anxiety might not be able to enter imaginary exposure vividly enough for the healing process to begin (Foa, Riggs, Massie, & Yarczower, 1995) and suggests that this group seek treatments where they will be less tempted to dissociate. Dissociation is something one does not experience very often using TFT with the therapist doing the tapping, which might produce a kind of disturbance that helps the patient stay in here and now mode. As TFT is an acupressure technique involving actual touching of the patient while the patient engages in imagery exposure it activates the patient's perceptual mode in addition to the verbal mode in accordance with the ideas presented by Arntz et al (Arntz, et al., 2007). In addition one might expect some of the same effect as with EFT-AS (Paivio & Nieuwenhuis, 2001), namely that the patient would feel less

alone and maybe experience the therapist as a trustworthy companion through the feared experience and a guide to better insight.

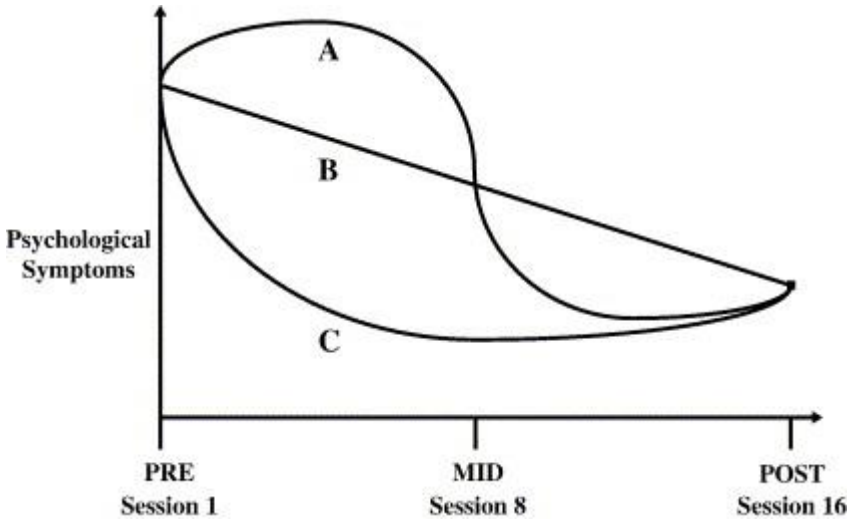
The idea behind combining PE and TFT was that the patient maybe would experience the effective PE treatment on a broader range of issues and, maybe also, at a faster pace by combining a treatment with well documented effect on the verbal trauma memory with a treatment focusing on a broader set of emotions connected to the trauma while activating the patient's perceptual mode to a greater extent than PE alone. PE is a method predominately developed for fear reduction, whereas TFT is a method claiming to work with a broader spectrum of emotions (Callahan, et al., 2002; Diepold & Goldstein, 2009). Since the patient in TFT is not bound by a predetermined re experiencing of the same event, as in PE, the patient's mind can wander more freely and thus engage in emotions beyond the core fear of the trauma imagery.

Prolonged Exposure is well documented, both alone and in combination with other therapies (Foa, et al., 1999; Foa, et al., 2005; Foa, et al., 2009; IOM, 2008), but there seem to be little evidence that the method actually has gained from any of the combinations it has been implemented in (Hassija & Gray, 2010; Marks, Lovell, Noshirvani, Livanou, & Thrasher, 1998). Hassija et al. (2010) conclude that the combination of exposure and cognitive techniques in the treatment of PTSD seem to have nothing to add to the effect of either treatment approach used in isolation.

The acupressure technique TFT provides proximity to a professional during the stressful re experiencing of the traumatic story, and does in itself not demand any intellectual processing of the emotions during therapy. Most clients do, however, talk a lot during TFT exposure, and seem to benefit greatly from this "talking their way through what happened" process, but the therapy is according to the manual (Callahan, et al., 2002) and research as efficient without word processing (Diepold & Goldstein, 2009). Given that words are not a necessity, and that findings suggest that some groups benefit less from PE due to strong fear, one might think that adding TFT with its skin contact could help the subjects with intense fear relax more and thus be more amenable to treatment. Based on implications that PTSD patients often struggle with cognitive restructuring when fear activated, this study is an attempt to disturb the automated responses by other distractions, rather than simply attempt to restructure their underlying cognitions, is worth investigating closer.

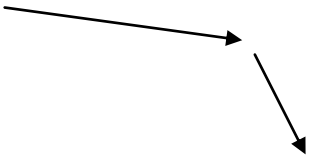
1.7.4 Improvement rates

Laurenceau and colleagues (Laurenceau, Hayes, & Feldman, 2007) argue that an exposure based therapy would be expected to show a pattern of improvement consistent with pattern A (see illustration below) as one would expect the client to experience increased distress as the exposure commences, and reduced distress as the processing of emotions proceeds. This is in line with what Foa herself depicts in anxiety patients exposed to imaginary exposure (Foa & Kozak, 1986).



Copied from (Laurenceau, et al., 2007).

TFT, however, has in the author's clinical experience shown to reduce distress much faster than ordinary psychotherapy. The author hope the SUDs after the introduction of TFT will avoid the increase seen in trajectory A, but drop at a faster pace than predicted by trajectory B, thus. A combination of PE and TFT would hopefully have a trajectory more on line with this:



Seeing that PTSD is such a disabling condition for the sufferers and their families there is a great need not only to find treatments that work with patients not recipient to the established methods, but also of trying to find out if treatments already evidence based can be added to in a positive way for the patient.

1.8 Design and research questions

The chosen design is an interrupted time series design. Usually this design is conducted with a baseline of no treatment to be followed by the introduction of a treatment, but it was here modified in the way that the evidence based treatment PE was given at baseline and then TFT was added. The patients were randomized to the three treatment conditions:

i) Prolonged exposure (PE) according to manual up till treatment 5. From treatment 5, through to treatment 10, acupressure in the form of manual based Thought Field Therapy (TFT) was added to PE.

ii) Prolonged exposure (PE) according to manual up till treatment 6. From treatment 6, through to treatment 10, acupressure in the form of manual based Thought Field Therapy (TFT) was added to PE.

iii) Prolonged exposure (PE) according to manual up till treatment 7. From treatment 7, through to treatment 10, acupressure in the form of manual based Thought Field Therapy (TFT) was added to PE.

The patients were randomized into these three conditions so that a between-subject comparison could be made at session 5 and 6. However, less patients than planned were referred to the study and not all the referred patients completed the study, thus the planned between-subject analysis had to be omitted due to small sample sizes. Since the introduction of TFT potentially could coincide with a natural drop in SUD scores due to normal progression of PE, the three conditions nevertheless function as control.

My main interest in this study was to investigate whether the introduction of TFT would influence the level or slope of PTSD symptoms during the course of therapy beyond the change resulting from PE alone. Next I was interested to see if TFT sessions would be associated with larger within-session emotional distress reductions than pure PE sessions. And last, but not least, if TFT sessions would be associated with different levels of emotional distress than pure PE sessions.

2 Method

2.1 Ethics

This study was approved by the Norwegian regional ethics committee (REC south/east) prior to commencement (Document 1, Appendix C). Written consent was obtained from each participant after the treating therapists at the outpatient clinics had considered the patients suited for participation and the subjects had received information about the study and all its implications. The patients agreed to being videotaped and audio recorded and to the use of this material in supervision of the student therapist's adherence to treatment procedures.

2.2 Participants, inclusion and exclusion criteria

The participants were referred to the study by their treating therapists at two psychiatric outpatient clinics after the treating therapists had conscientiously considered whether the patients were suitable for exposure based therapy. The diagnoses were, according to procedure at the two clinics, set or reaffirmed after the treating therapists had conducted M.I.N.I. There was, however, not obtained any data on inter rater reliability of the interviews with these patients.

The student therapist conducting the study had no saying in selecting the subjects and could not refuse subjects who had been referred. However, there was in two of the cases some consulting in advance regarding whether or not a particular trauma in question would be suitable for exposure treatment. After referral the subjects, in line with normal procedures, had the option to accept or reject participation.

9 patients came from individual therapies and 4 from group therapies. Inclusion criteria were:

a) satisfying DSM-IV criteria for persistent PTSD (DSM-IV-TR; APA, 2000).

b) PTSD symptoms are concluded by the treating therapist to be the patient's main problem and no other problems are in immediate need of treatment.

c) a clear narrative of the traumatic event.

d) not satisfying criteria for Dissociative Personality Disorder.

e) age from 20 to 65 years.

f) on stabile medication for a minimum of 3 months.

Exclusion criteria, following Foa, Hembree & Rothbaum (2007) were:

a) imminent threat of suicidal or homicidal behavior.

b) currently active, serious self-injurious behavior.

c) current psychosis.

d) current high risk of being assaulted.

These criteria are in line with conclusions drawn in a meta-analysis of psychotherapy for PTSD from 2005, suggesting that exclusion criteria in future research on PTSD be limited to the same exclusion criteria for trauma focused therapy one would apply in any responsible clinic (Bradley, et al., 2005).

After the patients had been referred to the study, they received additional information about the study by the student therapist and were given the information letter and consent form to review until next appointment, when treatment would begin according to protocol. 13 individuals met for information meetings and received the consent form, and all 13 signed up for the study. Of the participants who joined the study 4 resigned, in line with research (Zayfert et al., 2005), before completion. 3 of these resigned after the first session in the PE-protocol and thus resigned before any actual treatment begun. This dropout rate is slightly above the 20% to be expected based on a review (Hembree, et al., 2003) comparing dropout rates in PE with dropout rates in PTSD-patients receiving other treatments like EMDR, SIT or CT.

In retrospect it would have been wise to investigate how the patients dropping out rated the therapeutic alliance, in line with findings suggesting that early alliance is crucial for completion of PE (Keller, Zoellner, & Feeny, 2010), but unfortunately this was not done. The one common trait with the three individuals dropping out, is that the student therapist initially felt she didn't connect satisfactory with these patients. Hembree et al (Hembree, et al., 2003)

theorize that the manual based, very structured treatments, like PE, with a stringent focus on relief of trauma related symptoms may result in the therapist not giving sufficient attention to the patient's situational comfort and concerns. If the patient feels neglected in the "here and now" she will be less inclined to enter the scary and unpleasant "then and there" together with what she might experience as an insensitive therapist. In retrospect the student therapist can see that the three dropouts, to a greater extent than the other participants, all signaled skepticism to the speed of the process and none of them responded to the student therapist's efforts to reach them after the first session. One out of three did however respond to her regular therapists attempts to reach her and returned to ordinary therapy at the clinic. That two of the dropouts also were the first two patients assigned to the study might indicate that the student therapist might have been too eager and that she succeeded in adjusting her behavior and keep herself more attuned to the needs of the patients after losing the first two.

One patient withdrew from the study at the beginning of session 7, due to fatigue. This was a particularly seriously traumatized individual with multiple traumas both from incest and domestic violence over a period of about 18 years. When she withdrew she reported some relief from 2 of her traumas (SUDs declining from 100 to 40 on both of them), but she felt she had no more strength to deal with all she knew was coming. This patient also lacked social support, due to the fact that the spouse was not informed about her traumatic past. Research shows that patients with good social support benefit most from exposure based therapies (Thrasher, Power, Morant, Marks, & Dalgleish, 2010) and that lack of such support might make it difficult for the patient to endure the strains of both homework and the emotional arousal. In line with the progress of the study, the subject received training in TFT, so that she at least would have a tool to divert her thoughts when they became too distressful. The patient was referred back to her responsible therapist at the outpatient clinic from whence she came. With this particular patient limited time in combination with limited experience of the therapist, might have contributed to the abortion of the therapy by insisting that the subject follow the pace of the study. This is in line with contemplations made by Taylor et al. in a comparative study of PE, EMDR and relaxation training (Taylor, et al., 2003), suggesting that skilled therapists might be better qualified to guide the pace and intensity of exposure so that the patients are able to cope with it.

As three of the participants who resigned did so prior to actual treatment, there are no data from them to take into account in the analysis of effect. The fourth participant

withdrawing as late as in session 7 is however included in the analysis conducted on data within and between sessions, but omitted from pre- and post treatment measures on SCL-90 and BDI, as the patient did not fill in these two forms on withdrawal from the study. Her last PSS-SR is included as post treatment score together with the other completed subjects.

Foa, Hembree & Rothbaum (2007) stress that PTSD patients commonly rely on medication to handle the disorders' often incapacitating symptoms, and that their research experience show that medication commonly prescribed for PTSD symptoms neither hinders the process, nor the outcome of therapy with PE. Based on these directions patients taking medication was thus not excluded from the study. The period required on stabile medication was set to 3 months. The patients had to promise to adhere to the prescribed medication during the project and not introduce new medication during the project. There was however, no control of their compliance to this.

2.2.1 Trauma descriptions

All subjects were referred to the study on the basis of at least one index trauma. The index trauma was in all subjects the trauma most often appearing in flashbacks and/or nightmares and the trauma identified as the cause of their PTSD diagnosis by their regular, treating therapist. During the Standardized Trauma Interview, which was performed during session 1, an additional 2 traumas can be identified. In this study the traumas treated were, however, not all identified prior to treatment. Some came up during TFT treatment. In order to ensure that the traumas treated were more than stressful events, the treated incidents in this study given the label trauma all follow the criteria outlined in DSM-IV, that *the traumatized person must have experienced or witnessed a situation involving actual or threatened bodily injury or death, or threat to physical integrity, and must have felt helpless, horrified, or terrified during the experience* (APA, 1994). The subjects varied a great deal in both types of traumas and number of traumas treated during the 8 sessions of active treatment. The total amount of traumas (N=10) treated was 39.

Traumas were initially divided into 10 categories. Unfortunately the division into categories was done by the student therapist without taking into consideration the details of the fixed set of established categories in the Trauma Interview (Foa, et al., 2007). The categories chosen

were based on clinical experience on what types of traumas to expect in an outpatient clinic, so the traumas deviate somewhat from Foa's list. The traumas in the original list dealing with assaults were, for instance, merged in the category 2) Violence, the traumas 7, 8 and 10 are not on the list at all. However, this is the list that was used and the trauma distribution was:

1) Sexual trauma, total # 4 (10.26%). 2) Violence, total # 10 (25.64 %). 3) Accident, total # 0 (0%). 4) Natural disaster, total # 0 (0%). 5) Hospital related, total # 1 (2.56%). 6) Death of a loved one, total # 4 (10.26%). 7) Relational, total # 3 (7.69%). 8) Trauma related dream, total # 5 (12.82%). 9) War related, total # 1 (2.56%). 10) Sequelae, total # 11 (28.21%).

The categories 3 and 4, although expected, were not present in this sample. The category *trauma related dream* (8) need some further explanation. The dreams were either violent nightmares where the patient experienced a new trauma, which she intellectually when she was awake could see was a kind of reliving of the trauma episode. However it was in content so different from the actual trauma and so vivid that she woke up in death anxiety and dreaded the dream of dehumanizing terror as much as the original trauma. In another case what the patient thought was a dream about being killed (an extension of the sexual abuse she had been exposed to), proved to be recurring experiences of sleep paralysis. This dream was also included as the patient, according to her regular therapist, had dreaded this dream for more than 5 years and feared going to sleep because of it. The category *sequelae* (10) consists of loss of physical integrity and the intense helplessness associated with this.

The minimum number of traumas treated per subject was 2 and maximum was 8.

2.3 Measures

During the study the patients filled in a series of measures, both for use in this pilot, but also for the use in later articles and as background material for a possible later study.

2.3.1 Standardized Trauma Interview

The Standardized Trauma Interview (STI) is a modification of the Standardized Assault Interview (Rothbaum, Foa, Riggs, Murdock, & et al., 1992). It is designed to be appropriate for use with a full range of traumatic events and not restricted to physical or

sexual assault. The STI semi structured interview consists of 94 items and gathers information regarding demographic variables, and characteristics of the index trauma such as injury and life threat, and interactions with the legal system. It also collects information on up to two additional traumas. The STI was performed by the student therapist in the first session of the PE manual.

2.3.2 PSS-SR

The PTSD Symptom Scale – Self Report, part 3 (Foa, et al., 1993) is a 17-item questionaire where the patient uses a 4-point Likert scale rated from "Not at all" to "Five to more times a week", given the values 0 to 3. The items provide both diagnostic and severity information about each of the 17 DSM-IV criteria for PTSD. The maximum score of PSS-SR is 51, the minimum score is 0. Foa and colleagues have used a cut off score of 20 (Foa, et al., 1999), which is also used in this study. The PSS-SR consists of three subscales, re-experience, arousal, and avoidance, however only the total score is used in the analysis in this study. The self report was filled in at the beginning of each session, thus giving a measure for pre- and post treatment PTSD symptoms, but also a measure for between sessions symptom development. Patients score their symptoms for the past week, or, if sessions are more frequent than once a week, for the period passed since last treatment session.

2.3.3 Subjective Unit of Distress/Discomfort

The SUDs scale is used extensively within most therapies relying on the clients' consecutive report of emotional distress during therapy. The scale normally used with PE is numeric and ranges from 0 – 100 (Foa, et al., 2007). The scale normally used with TFT is numeric and ranges from 1-10 (Callahan, et al., 2002) or 0-10 (Diepold & Goldstein, 2009). As PE, in this study, is the main treatment method on which TFT is added, the PE scale was adhered to. As the scale is reporting *subjective* experience of discomfort, there is no set parameters for what for instance a SUD of 50 might entail, but the therapist normally anchor the scales values 100, 75, 50, 25 and 0 with each client. Anchoring takes place during an interview like conversation, where the therapist asks the patient to describe what it would entail for him to feel the worst he could feel (SUD = 100), how he would feel if he was free from distressing emotions (SUD = 0) and how he would feel when he was distressed at 25%, 50% and 75% of maximum. The patient is then asked to keep these anchors in mind when

reporting SUDs throughout the therapy. SUDs are reported at the beginning and end of each imaginary exposure take, and at 5 minutes intervals throughout the take, independent of the content of the traumatic story. Thus avoiding the problem of using therapist evaluations of what is, or is not, a hot spot and ensuring an even assessment of scores across takes and sessions.

2.3.4 SCL-90-R

Symptom Checklist-90-R (Derogatis & Unger, 2010) was developed by Derogatis and first presented in 1977. The SCL-90-R is a self report questionnaire consisting of 90 items. The patient answers using a 5-point Likert scale rated 0 to 4. The higher the total score the more severe symptomology. SCL-90-R assesses a broad range of issues from psychological problems, psychopathology, progression in treatment and treatment outcomes. In this study SCL-90-R was filled in pre- and post treatment.

2.3.5 BDI

Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) is a self report questionnaire consisting of 21 items. The patient answers using a 4-point Likert scale rated 0 to 3. BDI is one of the most commonly used measures of depression and has been proved both reliable and valid through extensive research. The BDI's split half reliability is .93 and the measure has been found to correlate with the depression-ratings performed by experienced clinicians.

2.4 Design

2.4.1 Randomization

The randomization procedure consisted in one bowl containing notes numbered 1 to 15, and one bowl with 5 notes numbered 5, 5 notes numbered 6 and 5 notes numbered 7. An assistant blind to the meaning of the numbers first picked a patient number from the bowl with 15 numbers, and then picked a number from the bowl with fives, sixes and sevens to

assign treatment condition. The patients were assigned patient numbers in the order of sequence they joined the study. If a patient dropped out the replacing patient would be given the next patient number in the row, but be assigned to the same treatment condition as the patient dropping out in order to keep an equal number of patients in each treatment condition. However, lack of time and shortage of subjects with PTSD diagnosis in the two clinics, prevented the intake of replacing patients and resulted in a study of 10 participants instead of the intended minimum of 15.

Because the numbering of patients and assignment to condition was done prior to subject referral, and treatment actually was begun on the first subjects before all were referred, there was no possibility of reassigning patients while the study was in progress. This is the reason for the skewed groups. To make things worse, a mistake was made during therapy. Patient #11, with the lowest ratings on all measures and the most time-and-place-isolated trauma, was mistakenly started on TFT in session 5 instead of session 7, as she was supposed to. In the data file her start point TFT was therefore switched with patient #1 who had had start point TFT 5, but had withdrawn from the study prior to treatment.

2.4.2 Therapist

There was only one therapist conducting all treatments. The student therapist was a student of psychology in her last semester of the Clinical Psychologist Studies (Profesjonsstudiet i Psykologi) at the University of Oslo. All treatments were conducted at an office at the outpatient clinic (Enheten for gruppeterapi, NVDPS) located at the regional hospital (Sentralsykehuset i Vestfold). The outpatient clinic had its own psychologist specialist as responsible supervisor of the project on location. The student was counseled by a professor of Psychology trained both in PE and TFT, who had practiced both methods for a number of years. The student was a trained TFT dx practitioner from Callahan Institute, California and was trained in basic PE at Modum Bad. She had practiced as a TFT therapist for 7 years when the study was begun and had extensive practice with traumatized patients.

2.4.3 Data

Data was gathered during the period between November 2010 and March 2011. All data was entered into SPSS at the hospital. As soon as the data entries were completed all the collected data, the discs of taped sessions and the audio files were moved to the storage cabinet of the hospital's own research database, where it will be kept until the date of destruction stated in the application to the ethics committee.

The data entries were controlled by an assistant blind to the purpose of the study and the meaning of the numbers. All calculations of scores on measures were both recalculated and checked against entries by the assistant, and any mistakes were corrected prior to analysis.

2.5 Treatment procedures

All participants received identical treatment procedures (Foa, et al., 2007) up till treatment 5, where some received TFT according to the treatment manual of TFT (Callahan, et al., 2002). According to the assigned condition, TFT treatment was commenced in either session 5, 6 or 7.

2.5.1 Procedure Prolonged Exposure

The treatment procedures used in this study are outlined in the PE manual (Foa, et al., 2007). As this study was conducted in Norway a translation of the manual used at the Norwegian clinic Modum Bad, and approved by Foa, Hembree and Rothbaum, was used.

Prolonged Exposure follows a structured progress where every step of the 10 treatment sessions is outlined. The first two sessions consist of information gathering about the trauma, explanations about the rationale behind the different elements of the treatment (imaginary exposure, in vivo exposure, breathing practice, listening to audiotapes) and general psychoeducation about trauma and bodily responses to trauma. After the first two sessions the client should be prepared to enter prolonged imaginary exposure under the supervision of the therapist.

Exposure begins in session 3 with approximately 60 minutes of re experiencing the trauma as if it was happening here and now, followed by 15-20 minutes of trauma processing, where the therapist helps the patient process thoughts and emotions associated with the trauma. The patient is instructed to listen to an audiotape of the imaginary exposure *every day* until the next session and do assignments in in vivo exposure according to an exposure hierarchy developed with the therapist in session 2.

Sessions 4-9 consist of prolonged imaginal exposure followed by processing of cognitions and emotions, and discussion of in vivo exposure. The patient is instructed to and encouraged to describe the trauma story in as much detail as possible during imaginal exposure. The trauma story will as sessions pass sometimes be conformed to a series of *hot spots*, where the patient only focuses on the most disturbing elements of the trauma story. For further details on the treatment protocol, please consult the manual (Foa, et al., 2007).

The final session in PE includes a last sequence of imaginal exposure, discussion of in vivo exposure, reviewing progress made in treatment and suggestions for further treatment. In this study a follow up session after one year, for research purposes, was agreed upon.

2.5.2 Procedure Thought Field Therapy

TFT is an algorithm based therapy pronouncing specific algorithms for specific ailments. The algorithms always consist of one or more sequences of treatment points (see Figure 1 in Appendix B), followed by a sequence called the 9 Gamut sequence (see Document 3 in Appendix C). The treatment points are to a certain extent emotion specific. TFT is considered to be a self help treatment, and is as such designed to meet the needs of "every person with any problem". Therefore the lists of algorithms in Callahan's books are set up to be easy to administer for the individual (Diepold & Goldstein, 2009). Scrutinizing the list of algorithms (Callahan, et al., 2002) the reader will see that many algorithms are used under more than one problem. This is helpful for the individual trying to self administer help with an isolated problem, but not so practical in clinic.

Since Callahan is male and many of the clients female, and the TFT therapist in the USA risks sexual harassment charges if touching the patient for instance in the region close to the breasts, Callahan very wisely developed a self help technique. This limits the usefulness of the therapy in clinic and makes it harder to treat very emotionally upsetting problems

because the patient needs to divide her attention between tapping and e.g. re experiencing. Being a female therapist practicing in Norway, and as such not very exposed to harassment charges, I very early introduced myself as the agent of acupressure and the client as a mere recipient. All patients are naturally informed that there will be a degree of physical contact and asked if they accept this prior to treatment. Thus the client can focus on emotions while the therapist does the manual work. Working in this fashion the client more easily lets the mind and emotions flow and can come to touch upon a series of emotions and sentiments and episodes with varying content. The free flowing mind is not very compatible with a "one problem, one algorithm"-approach. During my years of clinical experience with TFT treatment I therefore developed an algorithm for "complex emotions" (see Document 3 Appendix C). This algorithm encompasses the magnitude of emotions normally contained in more complex emotional experiences, such as traumatic incidents with elements of fear, anger, guilt, shame and emotional pain. Since I developed this special algorithm I have rarely felt the need to perform the more advanced TFT diagnostic procedures, dx (Callahan & Callahan, 1994). Discussing this challenge with Roger and Joanne Callahan at a personal meeting in Norway in 2007 I presented them with my special algorithm and was given the permission to use it in this study even though it is not a fixed algorithm from the Callahan Institute.

Using the complex special-algorithm allows the therapist to keep working as the clients thoughts and emotions flow freely, thus ensuring a smoother and hopefully more soothing therapy.

2.5.3 The twain meet

Combining western exposure therapy with eastern acupressure could potentially cause substantial challenges. PE is very faithful to its manual and allows to very little extent the therapist to intervene with the clients reliving. Introducing TFT to the PE session, great care was taken to follow the procedures outlined in the PE manual. Thus everything went according to the PE manual in that we started at the same spot in the trauma story as in the preceding pure PE sessions, and just added acupressure, using the special algorithm, while the client started imaginal exposure. Every 5th minute SUDs were taken, as in the pure PE sessions.

The supervisor, trained in both PE and TFT procedures, checked tapes of some of the sessions and assessed the procedures. His verdict was that the adding of TFT he saw and heard in the scrutinized sessions, did not change the PE procedure in ways beyond working as an additive to what one would expect to find in the PE procedure. However, it must be stressed that the evaluator left it to the student therapist to select the tapes, so one must always consider the selection bias in this.

All participants received a total of 10 treatment sessions each of which lasted between 90 to 120 minutes.

2.6 Data analysis and statistics

One of the main challenges analyzing data of treatment outcome is how to deal with the multiple levels of possible change. The method chosen to study the subjects in this study was the multilevel function available in SPSS, mixed model analysis. Thus the challenge of the interdependence of repeated SUDs measures of the individual across sessions is accounted for and adjusted. By modeling the covariance structure of the residuals and introducing individual-specific random effects, the dependency is accounted for. Akaike's Information Criterion (AIC) was used to compare the fit of different models.

To test the three research questions, PSS-SR scores, peak SUDs minus end SUDs across takes per session, and mean session SUDs were used as dependent variables in mixed model analyses including session number (1-10) and TFT or not (1,0), or TFT slope (e.g. 0, 0, 0, 0, 0, 1, 2, 3, 4, 5) as independent variables.

Scatter plots are used to visualize the SUDs development in individual sessions.

3 Results

Given the complexity of the data gathered only the results relevant for the research questions are related here.

3.1 Descriptives

The total number of patients completing the full 10 sessions of study was 9. Of these were 7 (77.8%) female and 2 (22.2%) male, the mean age was 41.89 years (SD = 10.86, range 23 - 61). The mean duration of their PTSD diagnosis was only 8.78 months (SD = 10.69, range 1 - 23), but the mean time elapsed since the traumatic event treated was 222 months (18.5 years. SD = 185.08, range 18 - 588) indicating that most individuals in this particular group of patients had gone undiagnosed for a rather long period of time and probably received focus on the traumatic elements in their past when their treating therapists got information about this particular study. Of the 9 patients completing the study 5 had one or more additional diagnosis to PTSD; 4 of these had Depression and 2 had Panic Disorder. All the 9 patients had received previous psychiatric treatment.

The total number of patients not completing the study was 4. All were female. The mean age was 31.00 years (SD = 7.26, range 22-39). The mean duration of their PTSD diagnosis was only 1month (SD = .00), but the mean time elapsed since the traumatic event treated was 142.5 months (11.9 years. SD = 123.19, range 18 - 276) indicating that most individuals also in this group had gone undiagnosed for a rather long period of time. Of the 4 patients aborting the study only 1 had an additional diagnosis to PTSD. This particular patient had the largest number of additional diagnoses (5 in total) and was the only subject with Axis II Disorder. Of the 4 non-completers 2 had received previous psychiatric treatment.

Since the one patient dropping out as late as in session 7 was included in the analysis, the dropout rate was calculated on 3 non-completers and ends at 23.08%. This is slightly above the number for PE alone, but below the number for PE in combination with other treatments (Hembree, et al., 2003).

3.2 Treatment effects

3.2.1 Pre and Post measures

The pre-and post measures were run through a paired samples t-test. There is a statistically significant mean score reduction from the pre-scores to post-scores on all three measures for the group as a whole (N=9 or 10) with 99% confidence interval.

Table 1 *Treatment effects total group*

	Pre treatment		**Post treatment**					
Measure	Mean	SD	Mean	SD	df	t	d	SD
BDI(N=9)	22.56	10.61	17.44	9.86	8	1.96	-0.50	10.24
SCL-90(N=9)	152.89	52.37	83.56	69.16	8	4.95	-1.14	60.77
PSS-SR (N=10)	33.60	8.33	16.50	14.93	9	4.27	1.47	11.63

Note: BDI = Beck's depression inventory; SCL = Symptom Checklist-90-R; PSS = The PTSD Symptom Scale – Self Report, part 3.

The Global Severity Index of SCL-90 give a visualization of the symptom reduction achieved by most patients during the study and can be seen in Figure 8, Appendix B. The GSI measures overall psychological distress by mean score (Schauenburg & Strack, 1999).

3.2.2 SUD scores within session

To answer our question whether TFT sessions would be associated with larger within-session emotional distress reductions than pure PE sessions, a mixed model analysis was conducted on the end SUD minus maximum SUD scores, using session and introduction of TFT as independent variables. Session showed a significant effect, t 2.537, p .015. The same did TFT, t -3.655, p.001*.

3.2.3 SUD scores between session

Using Mixed model analysis there is significant effect of session on mean SUD scores between sessions, t – 2.998, p .004, but there is no effect of TFT t -.840, p .404.

3.2.4 PSS-SR scores between sessions

As mentioned earlier PSS-SR was the only measure filled in by the patient at every session. The fact that the measure was filled in prior to treatment in each session is important, as the score identifies the development since last session. If TFT is introduced in session 5, the first PSS-SR score to monitor possible change that might have connection to the introduction of TFT would therefore be the PSS-SR score in session 6.

The mixed model analysis show significant effect of session on PSS-SR across sessions, t -3.423, p .001. There was no effect of TFT on PSS-SR level or slope across sessions, PSS-SR level: t -.690, p .492, PSS-SR slope: t -1.358, p.184.

Breaking the data down to individual level and looking more closely at the figures related to case specific information, in accordance with critical voices claiming that case studies should be more common in evaluation of therapies (Edwards, 2010) one might argue that mere means, at least in small samples like these, do not tell the whole story.

The patients' individual trajectories of PSS-SR scores over sessions, separated after introduction of TFT, are seen in figures 3 and 4, Appendix B. As these trajectories demonstrate, there is more going on than the simple reduction in scores over sessions visible in the output from the mixed model analysis. I will get back to this in the discussion.

4 Discussion

This study investigated three research questions:

1) Would the introduction of TFT influence the level or slope of PTSD symptoms during the course of therapy?
2) Would TFT sessions affect the patient's emotional distress during the treatment session differently than pure PE sessions, so that one would see greater distress reduction within exposure takes during combined treatment?
3) Would TFT sessions be associated with lower levels of emotional distress than pure PE sessions?

The introduction of TFT did not affect the level or slope of PSS-SR across sessions, there was however, as mentioned, only what might be interpreted as a trend (p .184) of the introduction of TFT in the slope. Looking at the Figure 5, Appendix B, there is however a marked difference in mean PSS-SR scores in the group starting TFT in session 5 compared to the two other groups, even though all groups had fairly equal scores to begin with.

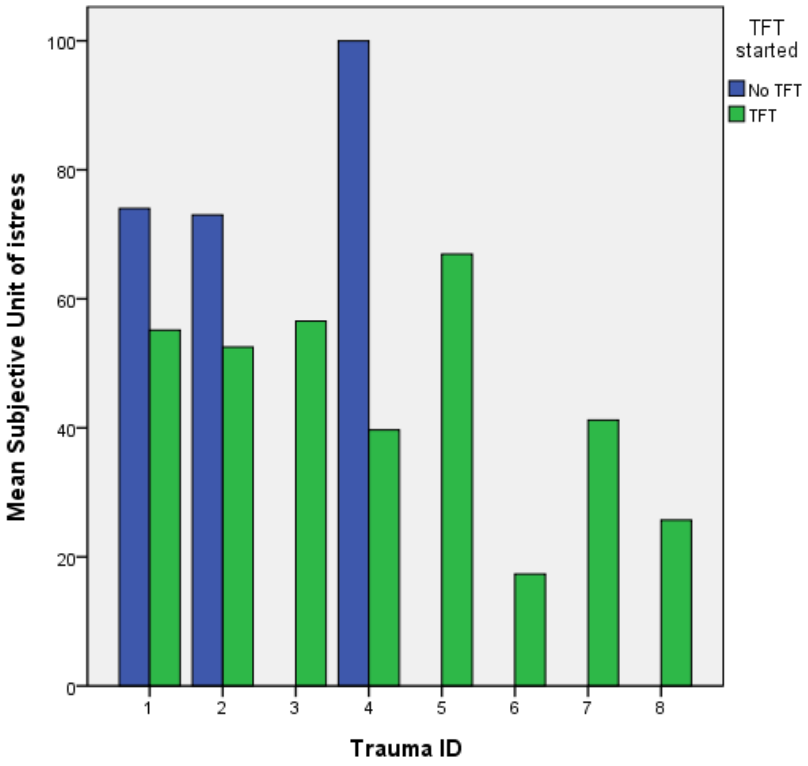
Paired samples t-test did, however, show statistically significant mean score reduction from pre-scores to post-scores on all the PTSD scores, BDI, SCL-90R and PSS-SR for the group as a whole (N=9 for BDI and SCL-90 and N=10 for PSS-SR) with 99% confidence interval.

Treatment sessions with TFT did in fact influence the rate of SUDs reduction within session compared with pure PE sessions. Some might suspect that this was because SUDs actually increased in TFT sessions before the SUDs reduction set in, but this proved not to be the case. The mean SUD scores within session, split by group are visualized in Figure 2 Appendix B and show that mean SUD per session generally is lower after the introduction of TFT. Foa and colleagues have reported expected decrease in SUD ratings from maximum SUD to about 20-30 by the beginning of session 5-6. This did not happen with any of the subjects in this study. The one patient who could have met this expectation was P11, who had a maximum SUD of 40 already in session 4, take 2, but unfortunately, she was introduced to TFT prematurely in session 5.

The third main result in this study was that TFT did in fact reduce the subjects emotional distress during treatment. Initially we were interested to see if this greater reduction was a

result of higher maximum SUDs during TFT, but that proved not to be the case. With this small sample the conclusion is that the adding of TFT to PE actually reduces SUDs within session better than PE alone. As Figure 9 show, the mean SUD in the traumas treated with the combined treatment was never above 70.

Figure 9: Mean SUD by trauma, split after treatment.



The results of good end state functioning, defined as PSS-SR scores below 20 (Foa, 1999) are very satisfactory and show (N=10) M=16.50, Range 1-45, Cohen's d: 1.47. In spite of the good result, as many as 4 patients scored above 20, but one of these was the non completer.

4.1 Challenges to be considered within session

Looking at the SUDs pr session scores several considerations need to be made. First: the patients' trauma stories ranged from rather compact stories of singular events to complex recollections of a traumatized life. Thus the recordings of SUDs need to take into account the numbers of incidents worked with during a session, if they are to convey what really took

place in therapy. Before data collection each trauma/trauma component was assigned a number and a trauma category. Thus a patient could have an index trauma (often the main trauma he initially wanted help with) called Trauma 1, category 2 (see 2.2.1 Trauma descriptions) but, in some cases, a series of additional traumas or trauma fragments. If trauma fragments in themselves were incidents one normally would call a separate trauma, each of these were given a separate trauma number and category. With one patient we, for instance, worked on a holiday trip in which one episode of violence would have been completely separated from another episode of violence had they not occurred at the same foreign location. To treat them as "one trauma" would therefore have made little sense.

Second: Not all patients had the same length of verbal account of their trauma. Thus one patient could spend the entire 60 minute session recalling one trauma one time, whereas the next patient could recall two to three traumas more than one time. In order to distinguish this, the SUDs rating formula is divided into takes 1-3, indicating that take 1 is the first imaginary exposure to that particular trauma in that session, take 2 is the second recollection of the same story and take 3 the third recollection. The takes would vary in content and emotional arousal depending on how easily the patient worked his way into the incident and how memories were triggered as the patient relived the incident in *here and now* mode. Comparing the exposure sessions, or the takes, one-to-one would indicate that they somehow were compatible, as they would be using PE alone, but which they rarely were using the combined treatment. Not all patients had more than one take and not all patients had takes of similar lengths and content.

Third: comparing one treatment condition alone with the same treatment condition performed with a second treatment added to it, proved to be more of a challenge than I expected. Although the trauma is the same, the therapist is the same and the client is the same, what happens to the trauma often is very different and the re experiencing sessions end up barely compatible. Being so different they can hardly be done justice being treated as compatible, the way our analyses have done following procedures common in PE research.

A look at the figures of traumas treated per session (Figure 10, Appendix B) show that the comparison of a pure PE session to a session of combined PE+TFT is not so straight forward. Through the pure PE sessions P3 was the only patient who every session worked with 2 traumas. However these were connected being two incidents of abuse taking place during the same day. P3 continued working with the same two traumas also in TFT sessions.

One other patient introduced a second trauma during PE in addition to one patient who brought up trauma number 2, as a one time mention which did not last through a 5 minute take. All other PE sessions consisted of one trauma.

The total number of pure PE sessions were 27. Of these a total of 4 (14.81%) consisted of 2 traumas.

The total number of PE+TFT sessions were 49. Of these a total of 23 (46.94%) consisted of more than two traumas. Maximum number of traumas treated in one (not merely reported, as sometimes was the case in session 10) was 5.

To illustrate my point, that mean SUDs might be more appropriate in the analysis of PE alone than in the combined condition, I would like to look closer at patient 10, session 7. In this session the patient worked through no less than 5 traumas in 40 minutes (all of the traumas were partially worked with also in earlier PE+TFT sessions). The mean SUD for session 7 is 24.38, whereas the real SUDs development during those 40 minutes (taken in 5 minute intervals) is as follows: 30 – 10 – 30 – 50 – 10 – 20 – 15 – 5 – 40 – 10 – 60 – 30 – 7. Looking at the shifts in SUDs, and knowing that 5 traumas are exposed in this period of 40 minutes, make it pretty clear that valuable information is lost in the process when this session is broken down to a mean SUD of 24.38. Figure 6 in Appendix B demonstrates the huge variation hidden in the simple information: M = 24.38.

Both the speed and the trajectory of perceived change in the individual's anxiety levels, as it manifests itself in clinical practice, have little to do with the steady decline predictions of a linear model. Actually the reported SUDs vary so much that using mean scores per session to calculate linear regressions might have little value if one wishes to indicate what actually happens in therapy (Hayes, Hope, & Heimberg, 2008; Price, Anderson, Henrich, & Rothbaum, 2008). Another illustration of this can be seen comparing again the mean SUDs of Figure 2 Appendix B, where the mean SUD for each patient is visualized within each of the three treatment conditions with the individual trajectories of two randomly picked patients in two randomly picked treatment sessions in Figure 7 Appendix B. For illustration purposes, the patient numbers and session numbers of the 2 patients in Figures 7.a and b (Appendix B) were randomly picked from two rows of figures, by an assistant blind to the study's purpose and the meaning of the numbers. Patient #5 is, for instance depicted with a mean SUD of 79.52 in session 6. The patient's individual SUD's ratings, given at 5 min

intervals, are: 30, 30, 70, 80, 80, 100 and 70 in take 1 (Mean = 65.71), and: 100, 80, 80 in take 2 (Mean = 86.67). Revealing the information that this particular patient seems to follow the trajectory depicted in Foa and Kozak's article advocating the need for exposure patients who try to bring up imagery of feared objects or situations to work their way into the fear (Foa & Kozak, 1986). Whereas session 7, with Mean = 62.50 show 2 quite different trajectories and a patient with an end SUD of only 20. Patient #9 is depicted with Mean SUD = 62.50 in session 5 and trajectories showing a steady increase in SUD level of 35 points, whereas session 9, with a Mean = 63.75 actually show a very varied trajectory raging from a peak of 90 after 5 minutes and ending on 50 after 35 minutes, thus showing an actual decrease in SUD of 40 points during this session.

Many proponents of exposure techniques have proposed that the efficacious component of for instance EMDR (and thus, probably also for TFT) is indeed the imaginary exposure part of the treatment (Taylor, et al., 2003) and they might, to some extent be right. This does not, however explain why, in this study, there actually is a difference in the speed of SUD decline in the sessions where TFT is added to PE in comparison to the sessions where PE is administered alone. Both PE and PE+TFT contain the exposure Taylor et al. claim to be the efficient part of both treatments.

4.2 Theoretical considerations

How can the results in this study be understood up against PTSD theory? Emotional Processing Theory (EPT) claim that activation of the fear structure and fear habituation, preferably both within session and between session, would suffice for resolution of a trauma causing PTSD. This is supported in some research (Grayson, et al., 1986; van Minnen & Hagenaars, 2002) and disputed in other research (Baker, et al., 2010).In this study the premises for fear reduction as described in PE theory were present and fear was reduced, in addition fear was reduced at a somewhat faster pace when TFT was added. Within-session habituation was thus present. However, this study apparently did not support the importance of between session habituation. Looking closer at what happened in sessions, this might not be altogether true. The analysis does not prove between session habituation. However, looking again at what happened on a more detailed level, it becomes evident that new traumas

and new issues surfaced during the progress of TFT. Thus the comparison of PSS-SR scores (see Figure 3 Appendix B) in the mixed model analysis are confounded by third variables.

Looking closer at the data collected during treatment one will see that after the index traumas have successfully been treated, new traumas were in many cases introduced, worries about future job aspects arose and marital problems caused by the patient who finally had the energy to object to the partner's doings because she is no longer paralyzed by fear surfaced. Patient # 6 had, for instance, excellent reduction in PSS-SR scores and in main SUD pr session until index trauma was reduced from SUD 100 to 50, she was rid of her sleep paralysis fear and she started focusing on her marital problems, which made her PSS-SR rise again. Patient 13 had reduced her index trauma from 100 to 0, and a second trauma from 40 to 1, but introduced a brand new trauma with SUD 100 in session 8 which was so difficult for her that it remained on 100 all through session 8, ended at 70 in session 9 and she refused to work with it in session 10, so it ended at 70. Much had been different in the analysis had treatment ended after index trauma was treated.

These data have not been possible to analyze in this study, but any future research comparing TFT to established treatment methods with well developed theories linked to specific statistical methods, need to consider thoroughly whether these, particular qualities of TFT are done justice with the selected statistics.

Looking at theories to support what happens during TFT one could claim that the tapping constitutes a stimulus to be conditioned instead of fear activation. Using information processing theory one could claim that the reliving of the dreaded experience together with a close and seemingly caring therapist, who in addition has skin contact with the patient throughout the fear evoking re experiencing, is more than conditioning, it will give the patient information about safety and care inconsistent with danger. Dual representation theory could also be used to explain how the mediation of closeness might help the traumatized individual bridge the gap between WAM and SAM by giving sensory stimuli while engaging in the verbal retelling. Callahan himself has no valid theory for the mechanisms of change in TFT, but hopefully more effort will be put into this question as more professional become interested in the results TFT obtain and, at the same time, express disbelief in the proposed pseudoscientific theory presented to date.

The activation of Lang's fear structure, which is one of the main principles in EPT can be said to be part of both PE and TFT, therefore there were so little problems just adding tapping to the PE re experiencing in therapy. Both treatments rely on fear activation. However the two methods actually collide a bit when it comes to the processing of the trauma story. Where PE leaves the individual pretty much alone (although the therapist will, of course, remind the patient that she is not alone, and that she is safe within the therapist's office if emotions become too severe), then TFT is constantly present with skin contact and the, at least sometimes, reassuring presence of another. This could also have the opposite effect, as some patients are so involved in their trauma that they occasionally seem to react with fear at being touched, especially in the face. Even so, most clients experienced a reduction in perceived SUD during TFT treatment that was faster than the reduction in SUD during PE treatment alone. Looking at the intellectual processing of the trauma the treatments differ in that PE has separated processing from the exposure as such, and talks the patient through the trauma after she, so to speak, exits the situation. TFT, on the other side, allows the patient to process during the trauma if she so wishes. Thus TFT processing can occur during emotional arousal, in the vicinity and tactile presence of a supporting therapist, and might lead to a broader processing with more corrective information. This is in line with thoughts put forth by Arntz et al in a comparative study of PE and Smucker's Imagery Rescripting (Arntz, et al., 2007). As there, unfortunately, was no investigation about how the patients perceived the two treatments or systematic registration of what the patients liked or disliked, or thought worked best for them, this question should be investigated closer in future research.

4.3 Clinical observations

Through mixed model analysis, the findings in this limited pilot showed an interesting effect of adding TFT to the evidence based treatment of Prolonged Exposure. There was, however, no distinguishable habituation between sessions, measured by PSS-SR or effect measurable by mean SUD across sessions. My initial motivation for doing this research was to see if TFT in any way could potentiate an already effective treatment like PE. This curiosity was triggered by the discussion going on about PE and its limitations regarding more complex types of PTSD.

One of the main experiences conducting this study was how the trauma story faded with PE but the patients all reported some kind of bodily sensation of feeling unwell.

Scrutinizing these bodily sensations we always ended up with some variant of shame, self hatred, self consciousness or anger. Only when addressing these more vague emotions in the shape of ”a lump in the stomach”, ”pressure in the chest”, ”a headache” or ”a lump in the throat like I’m about to cry” with TFT, did the patient report being totally free from the trauma memory. These findings would be in line with early signs of PE’s limitation, for instance with patients expressing anger as part of their PTSD symptomology (Foa & Kozak, 1986; Foa, et al., 1995), and more recent suggestions that shame is such an important part of PTSD that it would be difficult addressing it without taking shame into account (Harman & Lee, 2010).

In a TFT clinic one is often struck by the speed in which some patients seem to rid themselves of a multitude of traumatic memories, whereas others seem to take longer time working through two trauma memories. This was also seen in this study. One theory, going as far back as 1982 (Fairbank & Keane, 1982) is that the patients who have memories with common elements may have the benefit of carry-over effects, whereas more distinct trauma memories must be addressed specifically. During this process this was particularly seen in two patients who both had lost both parents in individual death beds carrying similar trauma triggering elements. When the first patient end her father’s death trauma on a SUD of 20, her mother’s death, although initially reported to be a SUD of 100 (same as father’s death) commences with a SUD reported to be 80. For the second patient the father’s death is reduced from 100 to 20 over several treatment sessions. By the time we get to working on the mother’s death, the perceived SUD thinking about it is reduced from 100 to 25 merely as a synergy effect of treating the trauma of the father’s death.

The findings that SUD reductions did occur faster and to a greater extent in the sessions where TFT was introduced must be interpreted with caution. First of all the groups where not compatible, neither in size, nor in trauma content, second the student therapist must be considered biased in favor of TFT and third there is no saying the same reduction would not have taken place at the same time had one merely continued wit PE according to normal procedure. This being said, there seems to be one different aspect entering this pilot, which does not take place in other PE studies, and that is the increasing number of traumas being treated after the introduction of TFT.

4.4 Limitations

This study sought initially to apply to the "gold standard" for research methods in PTSD studies outlined by Foa and Meadows (E. Foa & Meadows, 1997), but came short. The study was originally set up as an fMRI study and was approved by the regional ethics committee already in 2008. However, the fMRI at Rikshospitalet had some technical trouble during 2009 and after the test runs I did not get any more time slots that year. As fMRI is a very time demanding process I realized that the project had to be reorganized into an ordinary comparative study during spring 2010. This sent me on a chase for new patients, made me move the location of the treatments from Oslo to Tönsberg and demanded a new inquiry to REC regarding the changes. When REC decided they needed a full new application, due to the major changes in the study, and in addition sent the new application to a different REC committee for treatment, I ended up being very short of time. The first treatments could start in October 2010. I have learned a lot from this and will never put myself in a similar situation again, but the study is unfortunately nowhere near the standard I had wanted to comply with. This is how the study complied to the "gold standard of PTSD research":

1) *The symptoms must be clearly defined and a threshold for entering treatment should be identified.* In this study all the subjects were diagnosed with PTSD. However, there was made no distinction between different types of trauma and their severity, and there was no set threshold on either BDI, SCL-90 or PSS-SR for entering treatment. Thus the range in, for instance BDI and SCL-90 scores was rather wide. Another limitation was that there was no structured interview to assess PTSD diagnosis after treatment, so the only PTSD measure post treatment was PSS-SR.

2) *The employed measures must be both valid and reliable.* All measures were well tested and proven both valid and reliable in other studies.

3) *The evaluators of treatment outcome should be independent.* All measures were self reports. In order to control that the self reported measures were reported conscientiously, all measures were controlled by a double blind assistant (blind to the purpose of the study and to the meaning of the scores) who calculated every measure and controlled that the correct number was entered in SPSS. However there was no other control of the collected measures, so the student therapist could in essence have changed them. I have, however, adhered conscientiously to the ethics also in collecting, entering and treating data.

4) *Trained assessors must evaluate the treatment*. The treatment was in part evaluated by the student's supervisor, who is trained in both treatment conditions. The evaluation was done partly watching videos of therapy sessions and partly listening to audiotapes of sessions. However, only a limited amount of sessions were evaluated and the student therapist was free to select which tapes to present for evaluation. Even though the student therapist tried to be unbiased in the selection, this naturally is impossible and one would expect her to select tapes in favor of her performance. The videos watched and the tapes listened to by the supervisor where declared in accordance with the treatment manuals.

5) *The treatment must be manualized, replicable and specific*. All treatment was conducted according to the manuals. However, manual based therapies follow the principle that any therapist should be able to deliver the same treatment to any patient. This is hardly ever the case. David Edwards (Edwards, 2010) suggests using case studies to get better documentation on how individual therapies evolve in order to get a better understanding of how therapist responsiveness is used within manual based therapies. Even though the performing therapist in this study has followed both the PE-manual and the TFT-manual as far as what-to-do-when is concerned, the therapeutic responsiveness to the individual patients needs in different sessions will inevitably have snuck in personal variations. Had case studies been presented, it would have been easy to, as Eells calls it "read between the lines" (Eells, 2010) of the manual. However, as all sessions with all patients are performed by the same therapist, one can hope that the therapeutic responsiveness is divided equally. The therapist has sought to treat each patient in the same way and would have reported any conscious deviations from this norm.

6) *Subjects should be randomized to conditions and therapists.* Subjects were not selected by the student therapist, but referred by other therapists. Randomization was performed in assigning the subject to TFT starting point in session 5, 6 or 7. However, as there was only one student therapist and no real control group this cannot be said to fulfill Foa and Meadow's criteria in any way. A positive aspect of the subjects is perhaps that they were referred from the population of two ordinary outpatient clinics. As such they represented a broad specter of trauma categories and contributed to testing the two treatment methods across complexities.

7) *Treatment adherence ratings must be conducted.* The student therapist had a form to fill in in order to ensure her compliance with the treatment manual and this was followed to

the letter and filled in at every session. The Utility of Techniques Inventory, checking how the patient adhered to her homework and rated its utility was presented to the patient at every session. However, there were no sanctions for non-compliance and the adherence varied greatly across subjects.

The statement "the proof is in the pudding" suggests that the individual itself must decide for him-/herself whether or not the tasted substance is good enough. Wampold (Wampold, 2007) says it even more directly, stating that the active ingredient in any psychotherapy has nothing to do with empirically reliable explanatory power, but everything to do with whether or not the explanation presented by the therapist, or the treatment manual, seems plausible and obtainable to the patient. He takes, however, the standing that the explanation must be of the credible and scientific sort, and warns professionals especially from applying the same principle to, for instance TFT. This study is not a heavy contributor to proving TFT, it might, however, be another contributor to increased curiosity as to what exactly this method does that enhances fear reduction above e.g. an established treatment like PE.

Experimenter expectancies is another problem in this study. Shadish et al liken experimenter bias to the Pygmalion effect (Shadish, et al., 2002) where teachers' expectancies to particular students influence the actual performance of the student. The author of this thesis has no problem acknowledging her own abilities as a convincing therapist. Believing in both treatments I hope I have sold the entire concept persuasively. Being a more experienced TFT therapist, than PE therapist, I cannot rule out that my act has been more convincing in the combined therapist role, although this has not been done deliberately and I have tried consciously to work against this mechanism.

Monica Pignotti, once an advocate for TFT (Pignotti, 2007) published in 2005 a study showing that the sequence of tapping points had no influence on the effect of the treatment (Pignotti, 2005). However, Pignotti used tapping points identified by Callahan and only switched the order of them by picking notes representing each treatment point from a basket. In this study I used treatment points designated for specific emotions and put them in a logical sequence in line with other TFT treatment sequences. However, there is no guarantee that Pignotti not executed a nocebo effect on her result, nor that I did not execute a placebo effect on mine. If so, we both could be said to have acted according to Wampold's proposed mechanism for change.

One rather remarkable feature of this particular study was the very low drop-out rate of participants after the treatment program had started. Only one individual dropped out once the treatment started and that patient was one with a very serious trauma background and no social support to carry her through the rather difficult treatment. The number of subjects in this study was, of course, low, but even so only one dropout more than halway through the study, indicates either that the information given in advance was thorough enough for the subjects to understand what they were in for and consequently withdraw in advance, or that something made them feel cared for to a greater extent than in ordinary PE.

4.5 Future research

One of the experiences I am left with as student therapist in this study is how easy, non-invasive and fast the implementation of TFT seemed to ease the more complex emotions lingering in the patient after some treatments with PE. There are other treatments dealing with the same issues, but they demand more time than PE, not less (Ford, Courtois, Steele, Hart, & Nijenhuis, 2005; Gleiser, Ford, & Fosha, 2008). Future studies might find substantial gains for PTSD patients if this could be proven in a larger study.

The amount of data collected in this little pilot extends what I could make use of here. For my personal use I would like to have a closer look at what actually happened on the individual level. The models worked out for Prolonged Exposure seem to be based on the concept of the traumatized individual sticking to her trauma story. My experience conducting this pilot, is that the scene changed as other emotions worked their way to the surface during TFT. Neither ordinary mixed model analysis of within session habituation, nor between session habituation fathom the broad spectrum of events going on in a session dealing with as many as 5 traumas in sequence, or as many as 8 traumas during 7 treatment sessions. It would be interesting to try to see if these nuances can be captured through some other analytic tools, so trajectories more in line with actual SUDs development could appear.

All of the participants have agreed to meet again for a one-year follow up. It will be interesting to see then which patients have had permanent effect of this therapy and which have not. If the effect is lasting I hope to conduct a more valid study as part of my specialist

project. As this little pilot developed I learned a lot about what I hadn`t done properly and I hope to stand better equipped for more proper research in a second round.

To say it with Cukor et al: It remains incumbent upon the scientific community to put evidence-based treatments in the hands of the clinicians and to develop and evaluate broader treatment options (Cukor, Olden, Lee, & Difede, 2010).

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Appendix A Tables

Table 1 *Treatment effects total group*

	Pre treatment		**Post treatment**					
Measure	Mean	SD	Mean	SD	df	t	d	SD
BDI(N=9)	22.56	10.61	17.44	9.86	8	1.96	-0.50	10.24
SCL-90(N=9)	152.89	52.37	83.56	69.16	8	4.95	-1.14	60.77
PSS-SR (N=10)	33.60	8.33	16.50	14.93	9	4.27	1.47	11.63

Note: BDI = Beck's depression inventory; SCL = Symptom Checklist-90-R; PSS = The PTSD Symptom Scale – Self Report, part 3.

Appendix B Figures

Figure 1. TFT Callahan Techniques Treatment points

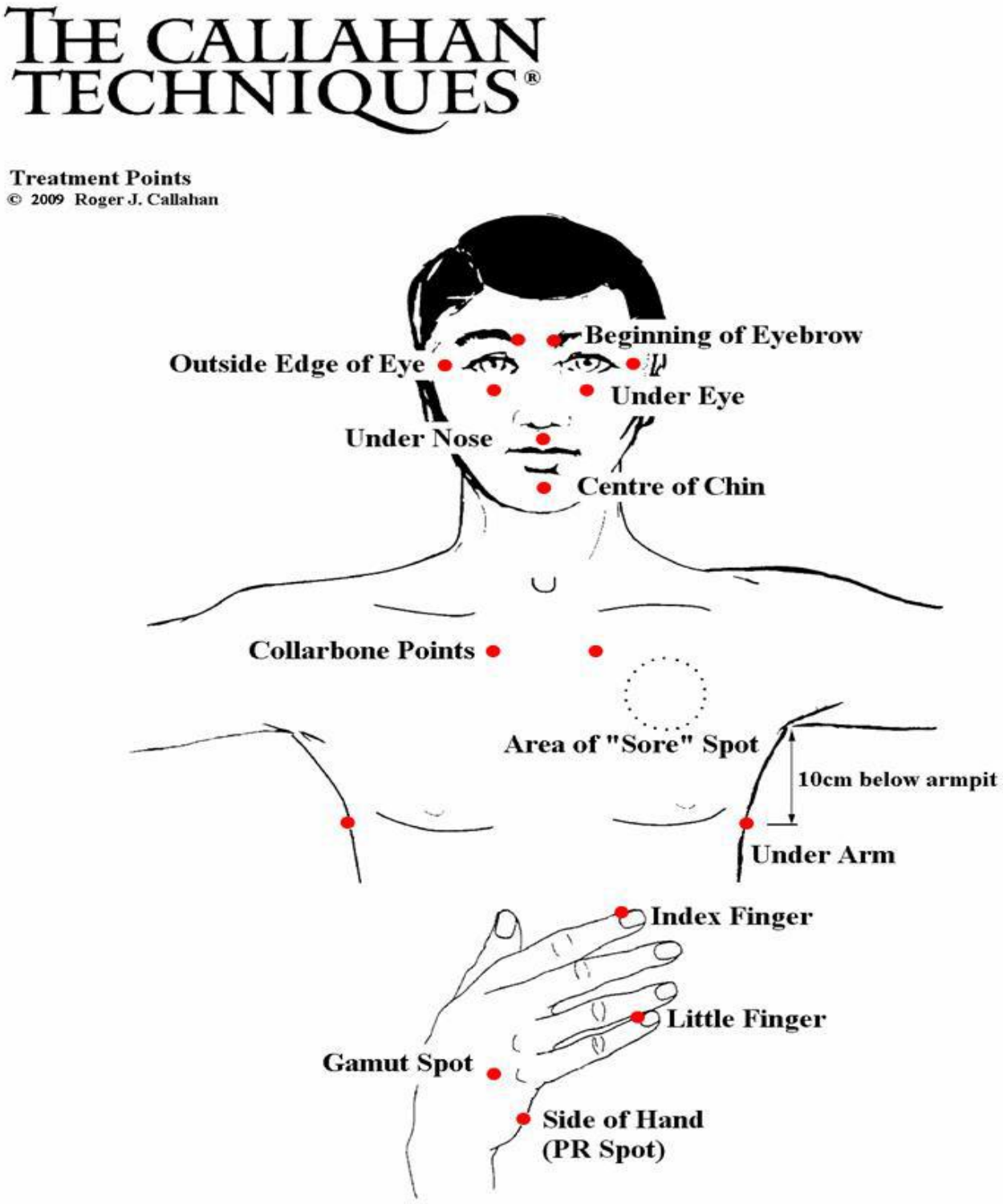

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Figure 2.Mean SUD pr session, split by TFT starting point.

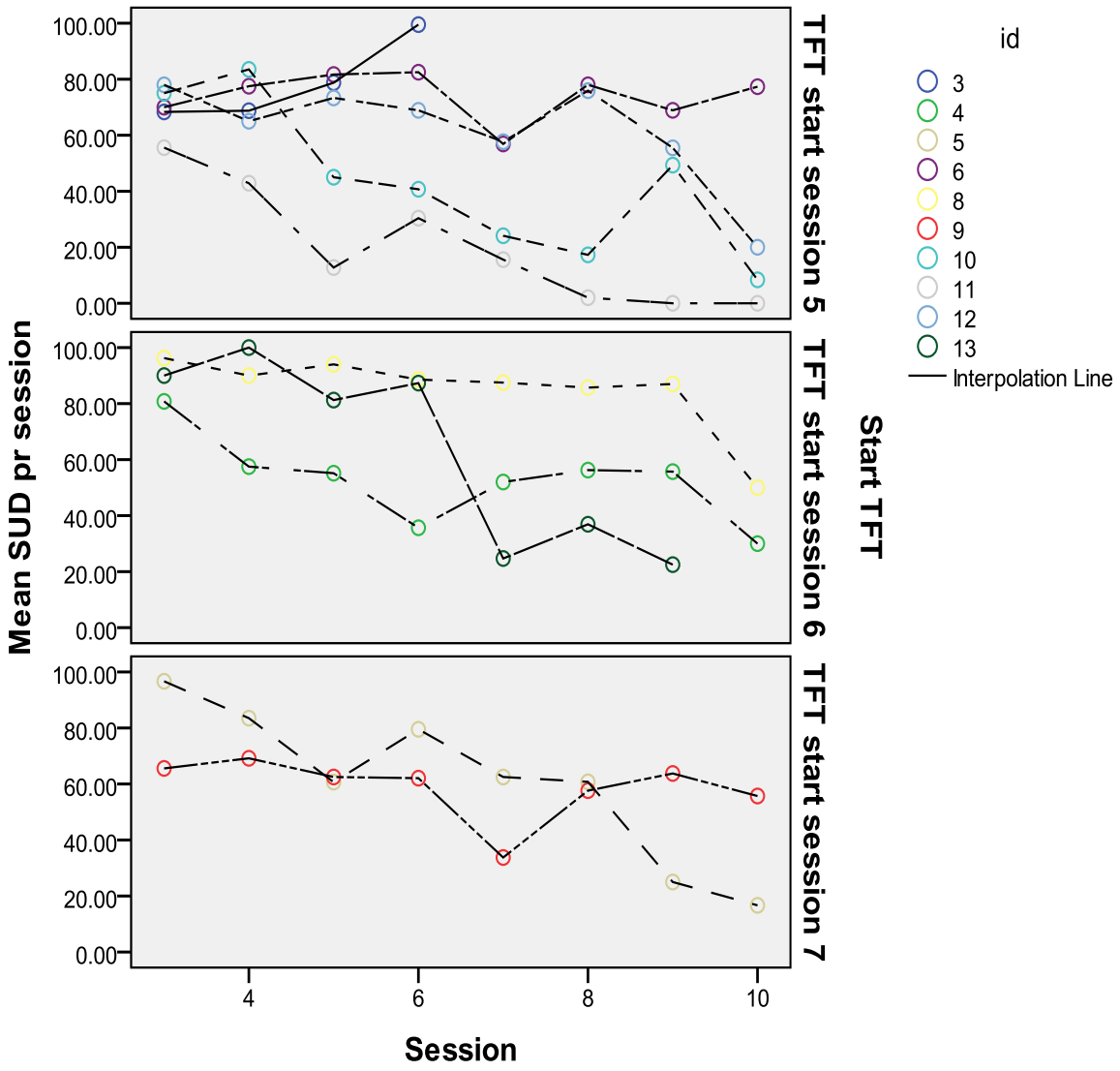
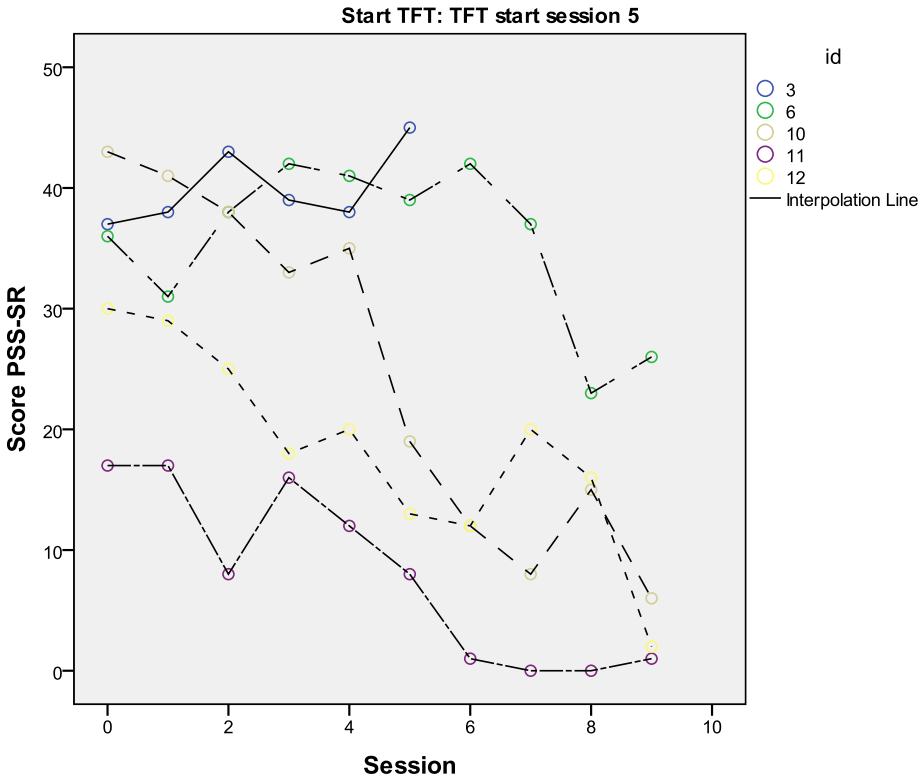


Figure 3 and 4: PSS-SR scores per subject per session, split by condition.



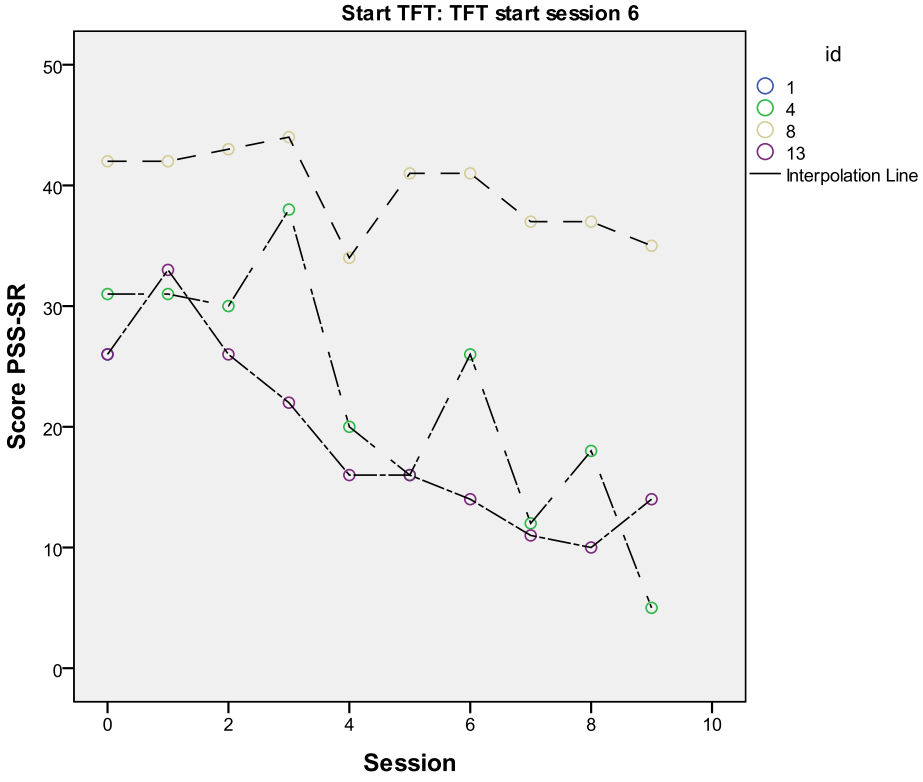


Figure 4

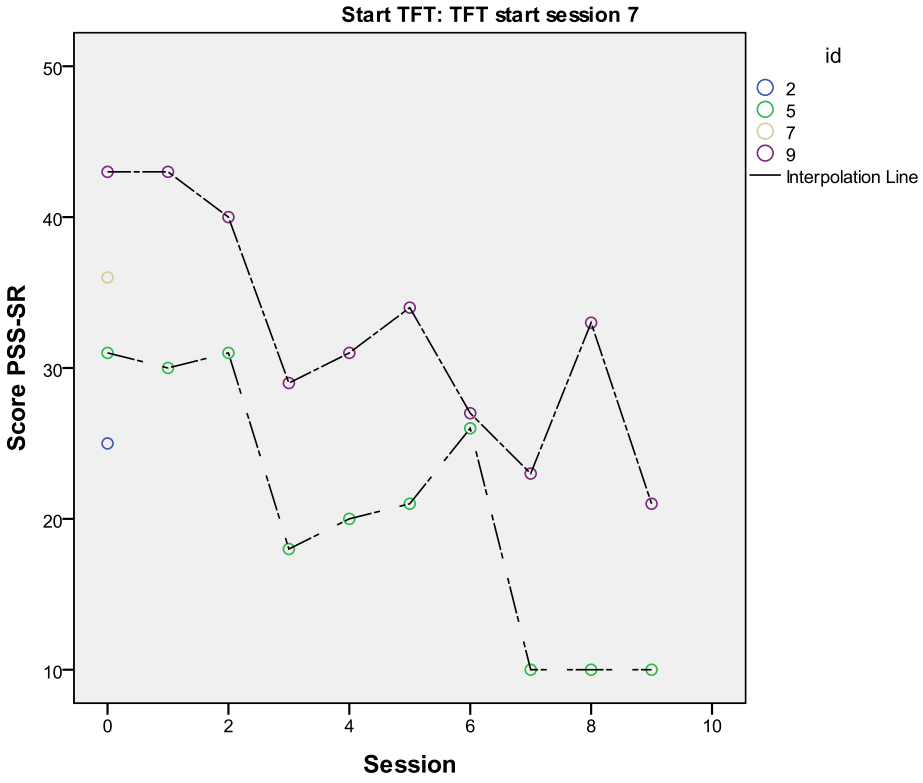


Figure 5 Mean PSS-SR scores per session, split by condition.

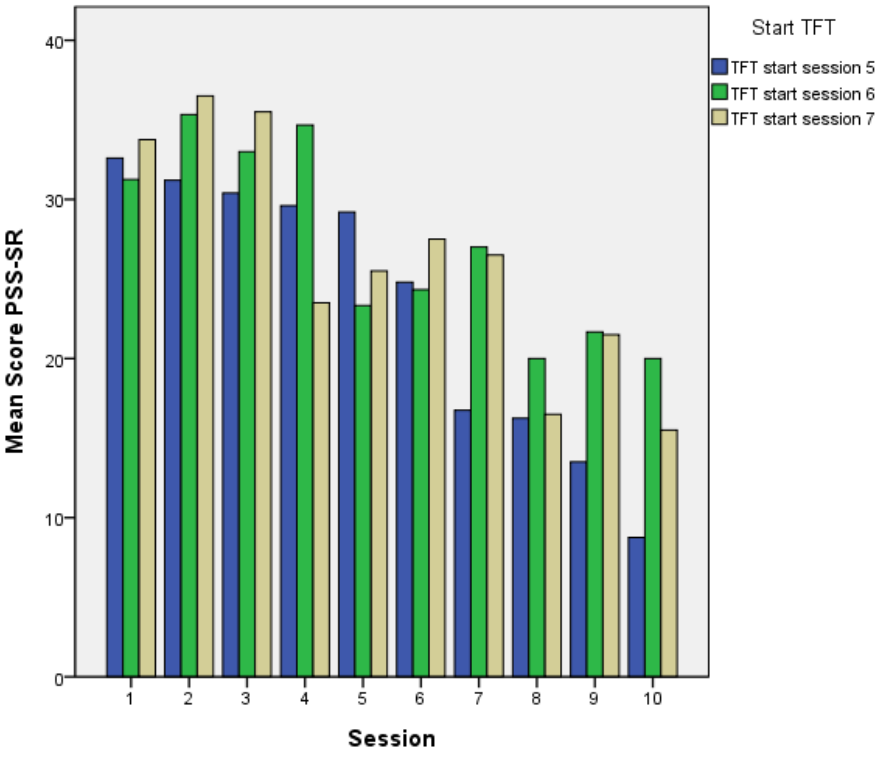
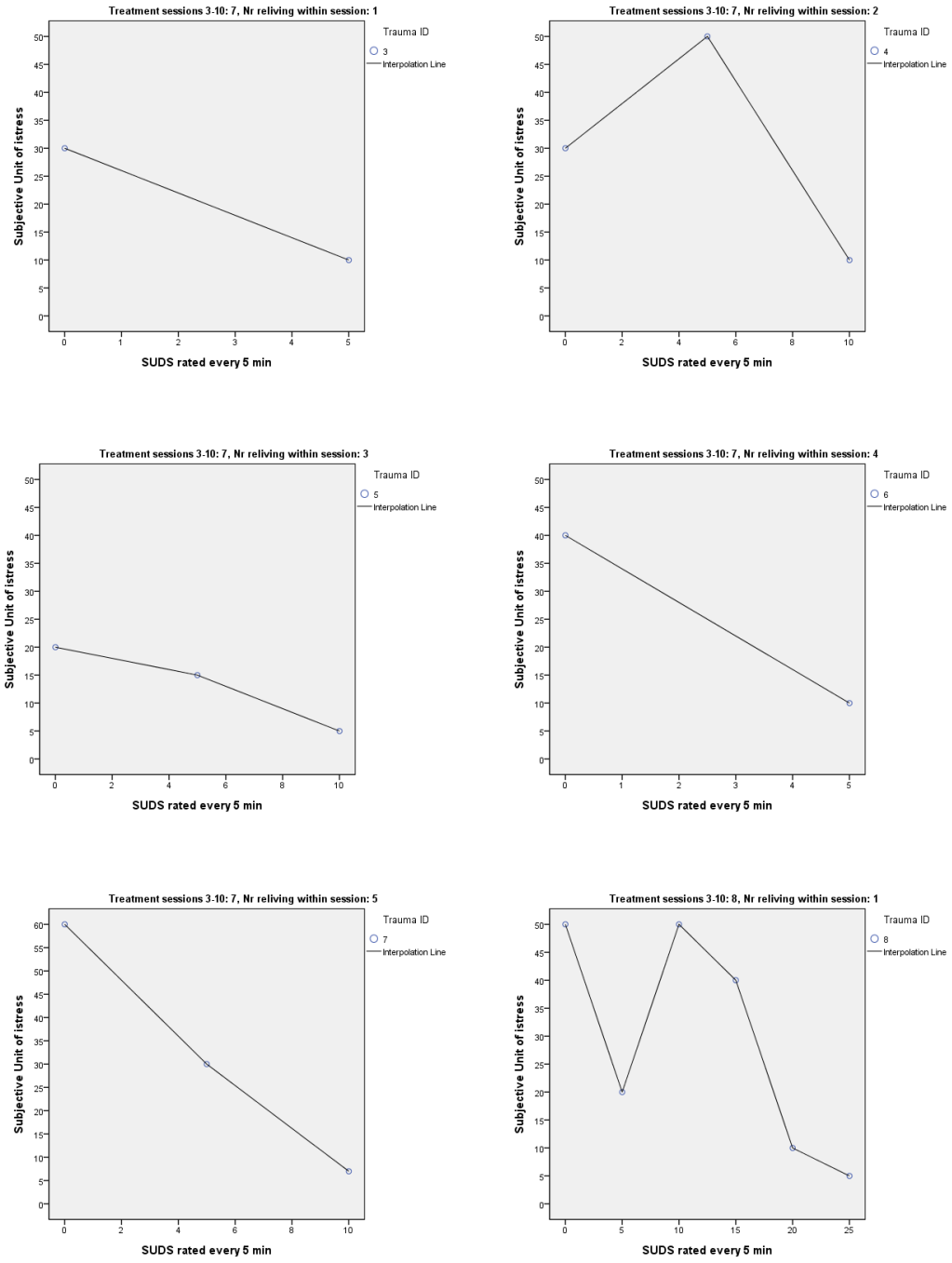


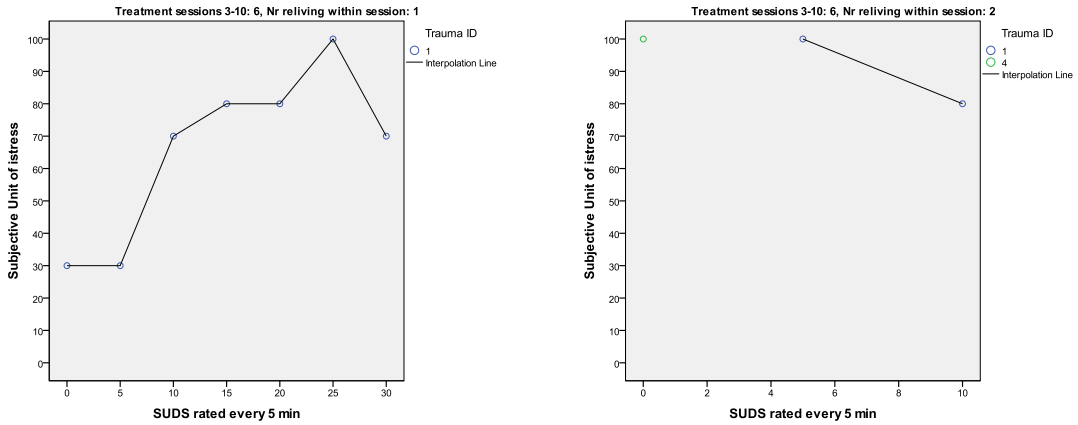
Figure 6. The SUDs development of Patient 10 in sessions 7 and 8.



Note: Session 7 has a SUDs rating from 0-60, whereas the rest have 0-50. The last diagram is from session 8, which only contained one trauma in one take.

Figure 7a and b. Individual trajectories from 2 patients, first with 2 sessions PE alone, then with combination treatment.

Figure 7.a*:*



Patient # 5. Two takes in session 6, with PE alone above and two takes in session 7, with PE + TFT below.

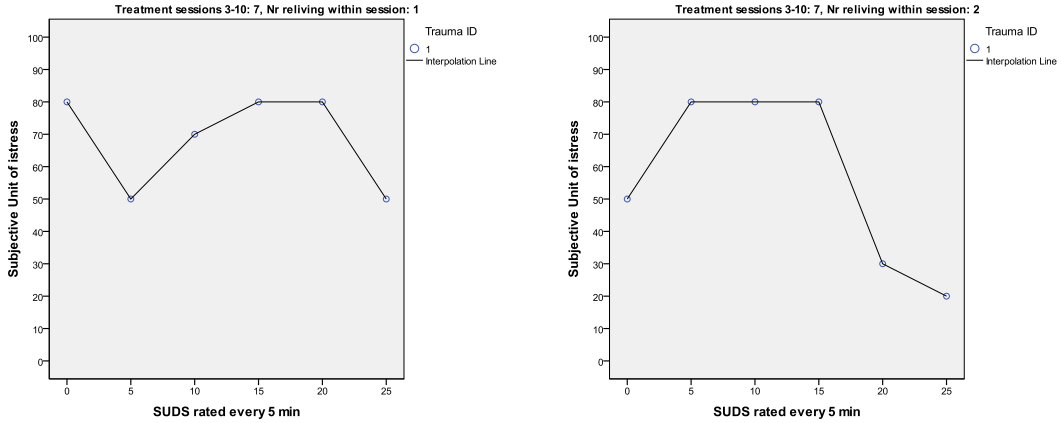
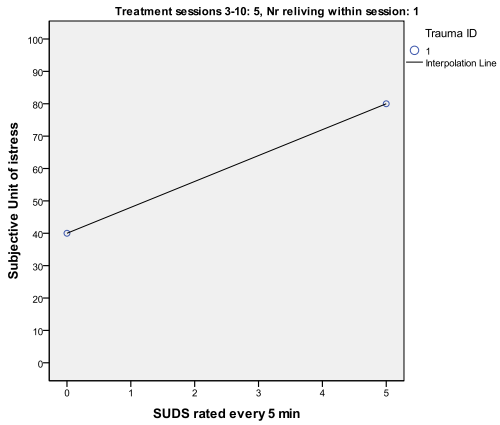
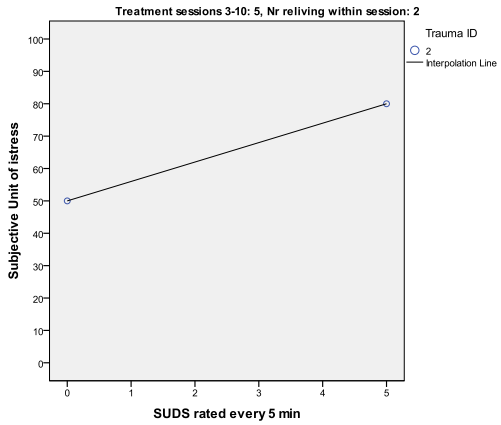


Figure 7.b:

Patient #9. First two takes in session 5, with PE alone. Then one take in session 9, PE + TFT.





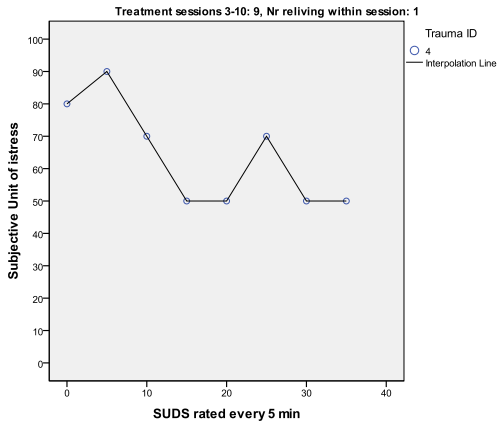


Figure 8: The Global Severity Index of SCL-90-R development by subject.

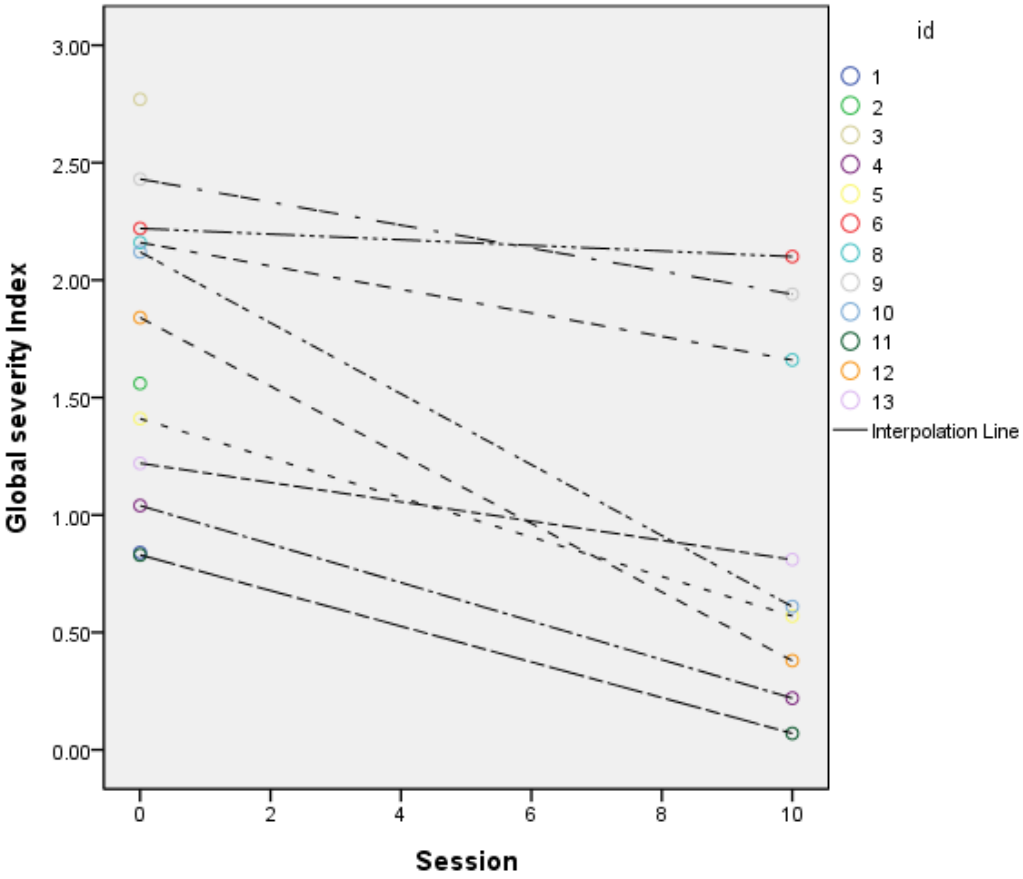
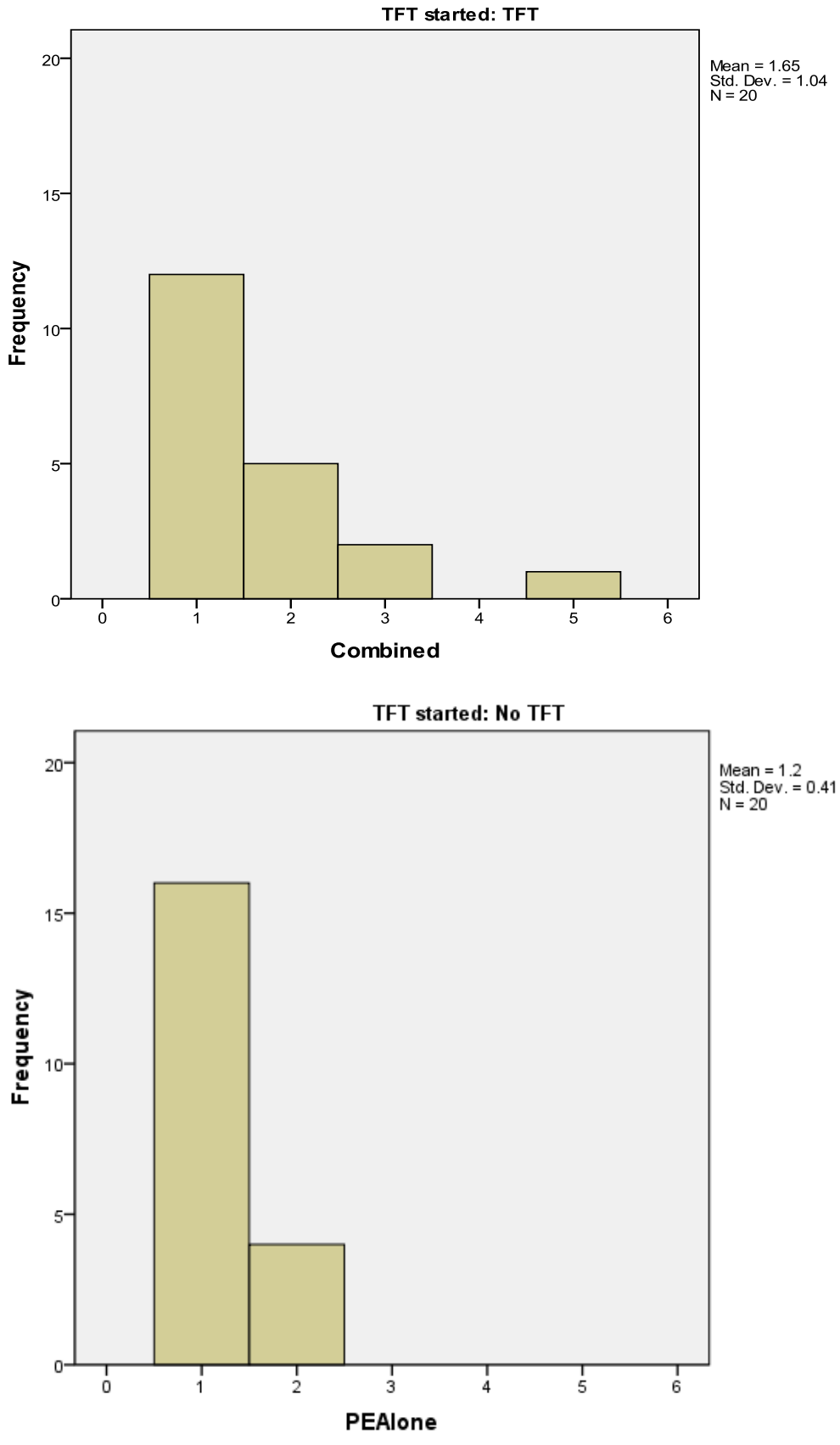


Figure 10: Traumas treated per session in combined treatment PE + TFT (above) and PE below.



Appendix C Documents

Document 1: Approval from the Regional Ethics Committee.

UNIVERSITETET I OSLO
DET MEDISINSKE FAKULTET

Seniorforsker Asle Hoffart
Modum Bad
3370 Vikersund

Regional komité for medisinsk og helsefaglig forskningsetikk sør-øst B (REK sør-øst B)
Postboks 1130 Blindern
NO-0318 Oslo

Telefon: 22 85 05 48

E-post: post@helseforskning.etikkom.no
Nettadresse: http://helseforskning.etikkom.no

Dato: 10.11.2010
Deres ref.:
Vår ref.: 2010/2364 (oppgis ved henvendelse)

2010/2364 Forsterker akupressur virkningen av visualiseringseksponering ved posttraumatisk stressforstyrrelse

Vi viser til innsendt svar på komiteens merknader mottatt 08.11.2010. Det er sendt inn skjema for tilbakemeldinger, brev til komiteen og revidert informasjonsskriv.

Komiteen tar svar på merknader til etterretning og har ingen flere innvendinger til at prosjektet gjennomføres.

Komiteen har kun noen mindre merknader til det reviderte informasjonsskrivet som bes justeres før prosjektstart:
Setningen "Opptak lydbånd slettes så snart dataene er analysert." presenteres før det er informert om at det skal tas lydbåndopptak. Avsnittet om hva studien innebærer bør informere om både lydbånd- og videoopptak.

Selv om det er aktuelt å ta ny kontakt med deltakerne ved en senere anledning bør det angis en dato for sletting. Komiteen ber om at materialet anonymiseres eller slettes senest 31.12.2013 med mindre det samtykkes til ytterligere lagring i forbindelse med et senere prosjekt. Dette bør oppgis i informasjonsskrivet.

Vedtak
Med hjemmel i helseforskningsloven § 10, jfr. forskingsetikkloven § 4 godkjenner komiteen at prosjektet under forutsetning av at de merknadene til informasjonsskrivet som er anført ovenfor blir innarbeidet før prosjektet settes i gang.

Godkjenningen av prosjektet gjelder til 31.12.2011. Av dokumentasjonshensyn skal opplysningene likevel bevares inntil 31.01.2013. Opplysningene skal deretter slettes eller anonymiseres.

Opplysningene skal lagres avidentifisert, det vil si adskilt i en nøkkel- og en opplysningsfil.

Forskningsprosjektets data skal oppbevares forsvarlig, se personopplysningsforskriften kapittel 2, og Helsedirektoratets veileder for «Personvern og informasjonssikkerhet i forskningsprosjekter innenfor helse- og omsorgssektoren».

Prosjektet skal sende sluttmelding til REK B på fastsatt skjema senest 01.06.2014

I tillegg til vilkår som fremgår av dette vedtaket, er tillatelsen gitt under forutsetning av at prosjektet gjennomføres slik det er beskrevet i søknaden og protokollen, og de bestemmelser som følger av helseforskningsloven med forskrifter.

Dersom det skal gjøres endringer i prosjektet i forhold til de opplysninger som er gitt i søknaden, må prosjektleder sende endringsmelding til REK. Vi gjør oppmerksom på at hvis endringene er "vesentlige", må prosjektleder sende ny søknad, eller REK kan pålegge at det sendes ny søknad.

Med vennlig hilsen

Stein Opjordsmoen Ilner (sign.)
leder

Julianne Krohn-Hansen
seniorrådgiver

Kopi:

- Universitetsdirektøren, universitetsdirektørens kontor, Pb 1072 Blindern, INTERNPOST
- Masterstudent Trine Elverum, trind@student.uio.no

Document 2: Explanation about TFT to the participants. Presented in the session when TFT is introduced according to design. For translation into English, please contact the author.

Informajon om TFT til deltakere i forskningsprosjektet:

Does acupressure potentiate the effect of imagery exposure on posttraumatic stress disorder?

Tankefeltterapi er en akupressurteknikk som går ut på å banke på akupunkturpunkter mens du aktiverer en tanke/tankerekke som du ønsker å bryte, men ikke ser ut til å ha særlig viljestyrt kontroll over. Ingen vet egentlig hva som er den virksomme komponenten i tankefeltterapi, men man tenker seg at det å tilføre deg en impuls utenfra, mens du tenker fastlåste tanker vil gi deg en ny impuls i en situasjon der du er vant til å få være uforstyrret. En slik forstyrrelse vil rokke ved det fastlåste tankemønsteret og dermed gjøre deg bedre i stand til å forandre det ved hjelp av viljen.

Vi har vært gjennom traumesituasjonen din flere ganger nå og vi skal gå gjennom den enda en gang i dag. Det som blir annerledes er at jeg vil sette meg i stolen ved siden av deg og utføre noen bankeøvelser mens du gjennomgår traumet på samme måte som tidligere, med øynene lukket. Jeg kommer, som vanlig, til å spørre deg om SUD hvert 5. minutt.

De punktene jeg kommer til å banke på befinner seg i ansiktet ditt, på overkroppen og på hånden din. Det gjør ikke vondt. Tanken er at det at jeg banker på disse punktene vil gjøre deg mindre alene i den vonde følelsen og samtidig gi deg en forstyrrelse i de tankene og synene som vanligvis utspiller seg nærmest av seg selv når du henfaller til dem, eller når de dukker opp i drømmer eller flashbacks. Når forstyrrelsene kommer tror vi det blir lettere for deg å koble om til mer hensiktsmessige tanker. Siden traumer er reelt grusomme hendelser er det en del av oss som synes det er helt naturlig at det skal gjøre vondt å tenke på dem. Den delen av oss vil på en måte forsøke å holde fast ved noe av det vonde, fordi det tross alt virker logisk at det skal gjøre vondt og det er det vi er vant med. For å forsøke å motarbeide den delen av deg som sliter med å gi slipp, vil jeg be deg om å gjøre en del rare ting mens jeg banker deg på hånden. Det jeg vil du skal gjøre er:

- å lukke øynene

- åpne øynene

- se ned i den ene øyekroken

- rett over i den andre øyekroken

- i bue fra en øyekrok, opp i lufta og ned i den andre øyekroken

- og i bue tilbake igjen

- så skal du nynne

- telle til 5

- og nynne igjen.

Dette virker helt meningsløst, men det henger faktisk sammen med hvordan hjernen din fungerer. Når du beveger øynene i bue fra den ene til den andre siden, så må de 2 hjernehalvdelene dine samarbeide. Da blir begge aktivert og du aktiverer også hjernebjelken som gjør at de to hjernehalvdelene kan kommunisere med hverandre. Når du beveger øynene, aktiverer du synshjernebarken. Når du hører at du nynner og teller aktiverer du hørselshjernebarken. Det er bare høyre hjernehalvdel som kan nynne og bare venstre hjernehalvdel som kan telle. Motorisk hjernebark styrer øyemuskulatur og stemmebånd og frontallappene avgjør om du skal gjøre som jeg ber deg om eller ikke. Følgelig blir den bevisste delen av deg opptatt med å gi kommandoer til hjernen, mens du forsøker å holde en fastlås tankerekke i aktivitet og vi skaper kunstig hjerneaktivitet i store deler av hjernebarken. Tanken er at den store aktiviteten som pågår parallelt med dine fastlåste tankemønstre skal gjøre det lettere for deg å koble om tankene i mer hensiktsmessige baner.

Er det noe du lurer på før vi begynner?

Document 3: Treatment steps and Special Algorithm

The TFT procedure followed the steps outlined in Tapping the healer within (Callahan, et al., 2002) with one exception. Callahan' s procedure makes a point of checking SUDs after the first section of treatment points, called the majors, before he continues with the 9 Gamut sequence. In order to follow the 5 minute intervals of SUD ratings outlined in the PE protocol, I refrained from this and instead introduced Psychological Reversal (see below) before tapping the algorithm. For further information on TFT treatment procedures please refer Callahan et al (2002).

The TFT treatment steps used in this study were:

a) Introduce the treatment (a translation of treatment rationale in Norwegian was handed out).

b) Have the patient focus on the trauma.

c) Treat with the treatment points in the special algorithm (see below).

d) Repeat the algorithm sequence until the problem is resolved.

e) End trauma or session with Floor to ceiling eye roll.

Special trauma algorithm (meridians in brackets): First tap the PR point to prevent psychological reversal, then tap:

EB – Eyebrow (Bladder) – associated with trauma

E - Under the eye (Stomach) - associated with stomach based anxiety

A - Under the arm (Spleen) - associated with general anxiety

CB – Collarbone (Kidney) - associated with consolidation

LF – Little finger (Heart) - associated with irritation, bitterness, jealousy

IF – Index finger (Large intestine) - associated with guilt

CB – Collarbone (Kidney) - associated with consolidation

Nose – Under the nose (Gall bladder) - associated with embarassment

Chin – On the chin (Central vessel) - associated with shame

CB – Collarbone (Kidney) - associated with consolidation

9G – 9 gamut sequence (Tapping the triple heater acupoint (TH3), while performing the 9 tasks: closing eyes, opening eyes, look down to the right, straight across down left, roll eyes from left – to ceiling-down to right, roll eyes back, hum, count to 3, hum). See Appendix C2, explanation to participants for more information).