

Therapist Treatment Adherence and Effectivity of a Five Day High-Intensity Inpatient Treatment for Posttraumatic Stress Disorder

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Abstract

Background: High intensity trauma therapies (HITT) consisting of daily sessions of trauma-focused therapy (TFT) are a relatively new, but promising development in the field of PTSD research. Current high intensity treatments are variably composed, including different types of trauma therapies and supporting elements (e.g. sports, yoga). **Objective:** Aim of the current study was to test the efficacy of a high intensity inpatient trauma therapy proscribing EMDR and exposure in reducing PTSD symptom severity. Additionally, the type and amount of deviation within the program were explored using an analysis of therapist treatment adherence. Lastly, the study aimed to examine the impact of different types of therapies provided where deviance occurred within the high intensity format on treatment effectivity. **Methods:** Treatment effectivity was analyzed by comparing scores on the PTSD Checklist for the DSM-5 (PCL-5) pre-and post-treatment as well as at follow-up using a paired samples t-test and a repeated measures ANOVA. Therapist treatment adherence was tested by categorizing data obtained from studying therapy notes of 107 patients (1070 sessions) into 11 different treatment categories and calculating the percentage of adherence and percentage of occurrence for each therapy observed. Analysis of the effect of treatment type on treatment effectivity could not be conducted because of insufficient spread in the data. **Results:** HITT led to a significant reduction in PTSD symptom severity both directly following treatment and at follow-up. Analysis of therapist treatment adherence showed an adherence of 78.4%. The most commonly occurring type of deviation was other types of trauma-focused treatment, with over 90% of total sessions including TFT. **Conclusion:** The present study demonstrated that high intensity inpatient treatments are effective in reducing PTSD symptom severity. Further study into the optimal composition of such treatments is needed.

Introduction

Posttraumatic stress disorder (PTSD) is a condition that may result from exposure to a potentially traumatic event (American Psychiatric Association, 2013) which is associated with significant detrimental effects on physical health (Zayfert et al., 2002; Felitti et al., 1998; Pacella, Hruska & Delahanty, 2013), functional impairments (Rodriguez, Darren, Holowka, Brian & Marx, 2010) and “significantly elevated risk of many different adverse life course consequences” (Kessler, 2000, p.9). Furthermore, studies indicate that those afflicted with PTSD suffer from high comorbidity with other mental disorders, such as mood, anxiety and substance disorders (Galatzer-Levy, Nickerson, Litz & Marmar, 2013). According to a review of World Mental Health surveys (Atwoli, Stein, Koenen & McLaughlin, 2015) exposure to traumatic events fluctuates strongly worldwide, as do lifetime prevalence rates of PTSD. In the Netherlands it was found that prevalence of any potential trauma was 80.7%, whereas lifetime prevalence of PTSD was 7.4% (de Vries & Olf, 2009).

Taking into account the risks to personal well-being associated with PTSD, it should come as no surprise that a large body of research exists which concerns itself with determining the most effective treatments for the disorder (e.g. McFarlane, 1994; Cukor, Spitalnick, Difede, Rizzo & Rothbaum, 2009; Watts et al., 2013; Cusack et al., 2016). This has, amongst other things, resulted in the creation of several trauma-focused therapies (TFT) and trauma specific variants of already existing treatments (Schnyder et al., 2015). Examples of such treatments include, but are not limited to: Eye movement desensitization and Reprocessing (EMDR; Shapiro, 1989; Shapiro 2001), Prolonged Exposure (PE; Foa, Hembree & Rothbaum, 2007) and trauma-focused cognitive behavioral therapy (tf-CBT; Cohen & Mannarino, 2008). Several of these TFTs have proven successful in combating PTSD (Powers, Halpern, Ferenschak, Gillihan, & Foa 2010; Watts et al., 2013) and as a result have been included as first-line treatments for the treatment of PTSD in mental health guidelines (e.g. National Institute for Health and Care Excellence, 2005; American Psychological Association, 2017).

The efficacy of TFT have been studied rigorously and they have often been found to be superior to non-TFT; A meta-analysis by Bisson, Roberts, Andrew, Cooper and Lewis (2013) for example, found that EMDR and Trauma-focused CBT produced better results than other treatments when it came to treating PTSD in the long term. Gerger, Munder and Barth (2014),

similarly found that TFT were more effective in treating PTSD than non-TFT, with the caveat that this effect was reduced for patients suffering from more complex forms of trauma. These patients still benefited more from TFT than non-TFT, but the effect was smaller when compared to those without more complex PTSD. Likewise Lee and colleagues (2016) found that TFT were superior to other, non-TFT for PTSD, as well as superior to pharmacotherapy. Furthermore, in a review of studies involving veterans Haagen, Smid, Knipscheer and Kleber (2015) deduced that it was the number of trauma focused sessions rather than the total number of psychotherapy sessions which positively predicted treatment outcome, implying a significant effect for the degree of trauma-focus within PTSD treatment.

A concern regarding TFT is that, while effective, they have high drop-out rates (Bradley, Greene, Russ, Dutra, & Westen, 2005), which exceed drop-out rates reported for present centered therapies (Imel, Laska, Jakupcak & Simpson, 2013). Furthermore, while drop-out rates reported in studies of TFT might be high, there is evidence that these rates are even higher when TFT are applied in real world clinical practice (Najavits, et al., 2015). This is problematic, as patients dropping out from treatment do not receive the full benefits of said treatment and thus have a reduced chance of experiencing a significant reduction in symptoms. Additionally, dropout leads to “inefficient use of treatment personnel” and can be “demoralizing to therapists” if the reasoning behind it is insufficiently explained (Sledge, Moras, Hartley & Levine, 1990).

Current recommendations are that TFT treatment sessions should be scheduled either once or twice a week (Gutner, Suvak, Sloan & Resick, 2016), although in practice therapists have been known to make modifications when implementing established treatment protocols (; Cook, Dinnen, Thompson, Simiola & Schnurr, 2014; Wiltsey Stirman et al., 2015; Bruijniks, Franx & Huibers, 2018). These modifications include, amongst other things, tailoring session content and condensing or lengthening therapy in order to individualize treatment and meet patients’ needs (Cook et al., 2014; Wiltsey Stirman et al., 2015). This suggests that in practice patients might receive a different type of therapy in a session intended to include TFT, or that TFT sessions might be spaced further apart or scheduled closer together than what might be desirable according to protocol.

Recently, evidence has come to the fore which suggests scheduling therapy sessions more frequently might improve recovery speed (Erekson, Lambert & Eggett, 2015). A finding which has been replicated with regards to TFT-sessions (Gutner et al., 2016). Some have posited that

this type of intensive format, with sessions scheduled more closely together might carry several advantages over regularly spaced therapy (Grey, McManus, Hackmann, Clark & Ehlers, 2009). Indeed, Ehlers et al. (2014) reported that intensive CBT treatment for PTSD delivered in the form of twice-daily sessions delivered over the course of a single week was as effective as the same CBT treatment delivered over the course of three months. Furthermore, symptom reduction occurred much more quickly for the intensive group than for the three month group and drop-out rates were comparably low in both conditions. Similarly positive effects were found in a number of studies into the effectivity of the high intensity format using EMDR (Bongaerts, van Minnen & de Jongh, 2017), prolonged exposure (Hendriks et al., 2018) and combinations of both treatments coupled with a form of physical exercise (van Woudenberg et al., 2018; Zepeda Mendez, Nijdam, ter Heide, van der Aa & Olf, 2018). Furthermore, a comparison of high intensity case-series with a control group demonstrated that high intensity treatments for PTSD can be effective in routine clinical practice (Murray, El Leithy & Billings, 2017). Of special note is the fact that none of the studies mentioned included a stabilization phase, regardless of PTSD complexity, and that none reported the occurrence of adverse events or symptom exacerbation. Furthermore, drop-out rates for all reported studies were very low, alternating between 0 (Hendriks et al., 2018) to 3.3 percent (Ehlers et al., 2014) of participants. This suggests that high intensity treatments are not only safe to use, but could possibly prove to be a solution to the drop-out problem of regularly scheduled treatments, whilst at the same time being more time- and-cost effective.

Current high intensity treatments use very diverse protocols, with most including TFT sessions as a core feature. Within the field of high intensity treatments, however, no study has yet been conducted which evaluated the degree of therapist treatment adherence, a component of treatment implementation fidelity which can be defined as “the degree to which a therapist uses prescribed procedures and avoids proscribed procedures” (Schoenwald et al., 2011). This is unfortunate as such an analysis could provide valuable information about the working components within the high intensity setting and might enable study of the impact therapist treatment adherence has on effectivity of such treatments, particularly with regards to the type of therapy used.

In a first attempt to explore these issues the current study will assess treatment effectivity and therapist treatment adherence within a five day high intensity inpatient treatment program

for PTSD and, if there is sufficient spread amongst therapies used in the dataset, study in what manner the amount of TFT or other treatment sessions within the program affects PTSD symptom severity. The treatment program in question consists of 10 TFT-sessions (8 EMDR, 2 Exposure), but expectations are that deviation from protocol occurs occasionally when clinicians feel this better suits the patient's needs. In some instances this means that non-TFT might be administered rather than TFT. Based on the literature discussed previously hypotheses are firstly, that patients will see a decline in their PTSD symptoms following the high intensity treatment, secondly that therapist deviance from protocol occurs within the sample, and lastly that those patients who receive more TFT sessions will report greater reduction of PTSD symptoms post-treatment and at follow-up.

Methods

Participants and Procedure

Patients were recruited by means of regular admissions procedures of Centrum '45 and could be referred either externally or internally for the High Intensity Trauma Therapy (HITT). After referral patients were invited for an intake in which their symptoms, traumatic experiences and expectations of treatment were discussed. Diagnostics consisted of a structured interview assessing PTSD symptom severity (Clinician Administered PTSD Scale for DSM-5. CAPS-5; Weathers, Blake, Schnurr, Kaloupek, Marx & Keane, 2013) and filling in a routine outcome measurement (ROM). A blanket consent form preceded the ROM. Patients who met criteria underwent a physical examination and were given a tour of the facilities. In anticipation of HITT patients continued treatment as usual.

To be eligible for HITT patients had to be embedded in ongoing treatment with a therapist who could assist with required preparations and who would resume care after HITT. The preparations in question consisted of drafting a caseconceptualization and a crisisplan (see Appendix A). Furthermore, patients were required to meet the criteria for PTSD according to the CAPS-5. Patients also had to be motivated for an intensive therapy. Exclusion criteria for treatment were acute suicidality, ongoing substance abuse, a lack of ability to talk about traumatic experiences, and having previously participated in HITT. In this last case, only the first instance of HITT was included in the study sample. Patients who participated in two consecutive weeks of treatment were wholly excluded.

Measurements, which consisted of the PTSD Checklist for the DSM-5 (PCL-5), were taken at three timepoints. The first measurement was consistently taken pre-treatment on the first day of the intervention and was administered on paper. Administration times of the other two measurements, however, were adjusted over the course of the study. Initially, only two measurements were taken, the pre-treatment measurement and a post-treatment measurement on the final day of the intervention. More recently, however, the time of the post-treatment measurement was adjusted to one week removed from the final day of treatment, and a onemonth follow-up measurement was added. Patients could fill out the post-treatment and follow-up measurements in the secure online environment Questmanager (VitalHealth Software, 2018).

At the time of writing HITT has been conducted 218 times in Centrum 45's clinic. Of these 218 instances 107 participants were included in the final dataset (see figure 1 for an overview of the exclusion process). Of these 107 remaining patients 70 were male and 37 were female. Mean age was 43.8 years ($SD= 11.5$) with the youngest participant being 21 years of age and the oldest 66 years. The sample included patients of diverse traumatic backgrounds (see table 1).

Table 1.

Type and prevalence of traumata treated within the High Intensity Trauma Therapy (HITT)

| Type of traumata | N | % |
|--------------------------|----|------|
| Childhood (sexual) abuse | 19 | 17.8 |
| Violence or other | 9 | 8.4 |
| Sexual abuse | 8 | 7.5 |
| Military service | 30 | 28.0 |
| Police service | 28 | 26.2 |
| Other service related | 5 | 4.7 |
| Refugees | 3 | 2.8 |
| Post-war generation | 5 | 4.7 |

Note. N = the number of participants. % = the percentage of participants out of 107 that reported this type of traumata. Percentages may not add up to 100 because of rounding.

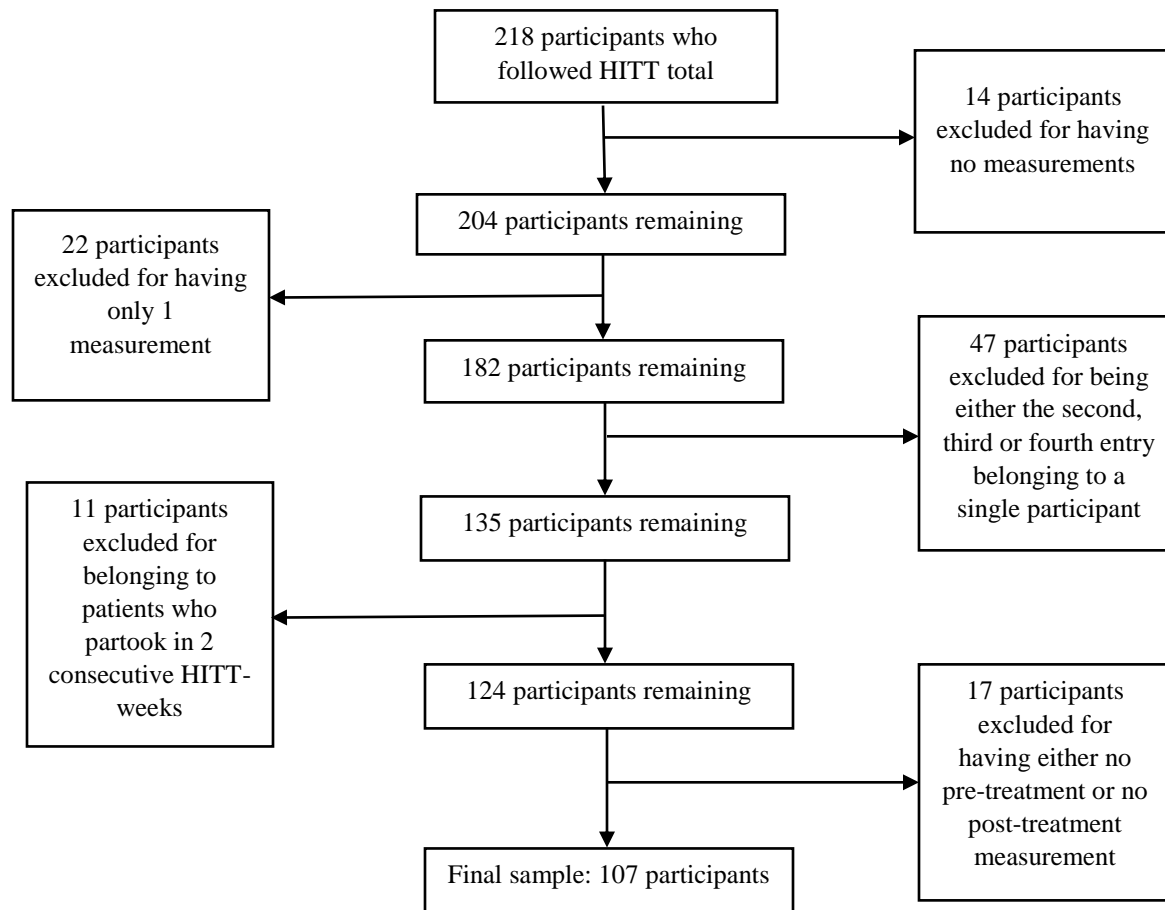


Figure 1. Flowchart of exclusions made from the sample of High Intensity Trauma Therapy (HITT) participants.

Intervention

The intervention consisted of a one week, high intensity trauma therapy (HITT). For the duration of the treatment patients stayed in an open clinic. At all times sociotherapists were available to assist patients. Patients were admitted to the clinic on Sunday evening. At this time they were asked to fill in the PTSD checklist for the DSM-5 (PCL-5, source). On Monday treatment started with a 90 minute EMDR session following protocol as described by Beer, Groote, Oppenheim, and Ten Broeke (2015). This was followed in the afternoon by another 90 minute session of EMDR. Finally, patients took part in a 60 minute group session of trauma-centered yoga along with others participating in the HITT (max 3 people). Protocol for the trauma-centered yoga was

derived from a combination of 2 separate protocols (Emerson & Hopper, 2011; Mason, 2011) and was focused on creating a safe and predictable environment in sessions. In between TFT-sessions patients were encouraged to exercise, but were free to engage in personal leisure activities as well. In the evening there was a contact moment with a sociotherapist. This pattern repeated itself for Tuesday through Thursday, with each patient having two different EMDR therapists who alternated treatment on a daily basis. All therapists were trained at minimum in EMDR level 1 with at least one of each duo being EMDR level 2 trained. On Friday patients engaged in two 90-minute exposure sessions instead of EMDR. The first session was conducted by a psychologist, the second by a sociotherapist. On Saturday morning patients left the clinic at their own convenience. Deviance from the above protocol was possible if the treating clinician judged it necessary for the patient's sake.

Materials

Life Event Checklist for DSM-5 (LEC-5). A Dutch version of the LEC-5 with extended A-criterion (Boeschoten, Bakker, Jongedijk & Olf, 2014) was used to screen for the type of traumata patients had been exposed to in their lifetime. It was also used to determine patients' PTSD A criterion for the CAPS-5. The LEC is a checklist consisting of 17 types of potentially traumatizing events. Participants are asked to rate their exposure to these events by stating whether they have experienced an event themselves, have borne witness to an event, have heard a good friend or family member was exposed to an event, have been exposed to an event in the line of work, whether they are unsure if they have been exposed to an event, or whether they haven't been exposed in any of the previously mentioned capacities. The extended A-criterion version further asks patients to select the most harrowing event of those they have experienced and to provide more details about this event.

Clinician Administered PTSD Scale for the DSM-5 (CAPS-5). Presence of posttraumatic stress disorder (PTSD) at baseline was measured using a Dutch version of the CAPS-5 (Weathers, Blake, Schnurr, Kaloupek, Marx & Keane, 2013; Dutch translation Boeschoten et al., 2018). The CAPS-5 is a structured interview that consists of 20 items, each corresponding with a PTSD-symptom as defined by the DSM-5. It measures symptom intensity and frequency over the past month. Additionally, there are 10 items regarding general PTSD severity, duration, distress or impairment in important areas of life, as well as items concerning depersonalization and derealisation symptoms.

Replies are scored based on both the reported intensity and frequency of the symptoms, in which intensity weighs more heavily than frequency. Combined intensity and frequency result in one score on a 5-point Likert scale ranging between 0-4, with 0 equaling absence of a symptom and 4 equaling extreme presence. A score of 2 or higher indicates significant presence of that symptom. By comparing significantly present symptoms to DSM-5 criteria a PTSD diagnosis can be made. Scores for each of the four symptom clusters (intrusions, avoidance, negative alterations in cognition/mood, arousal and reactivity) can be calculated by adding the severity scores of symptoms within the cluster (e.g. add scores for C1 avoidance of thoughts and C2 avoidance of stimuli to obtain the cluster score for avoidance). The total PTSD severity score is calculated by adding up the severity scores for all symptoms, resulting in a score within a range of 0-80, with a higher score indicating more severe PTSD.

The CAPS-5 is widely regarded as the golden standard for PTSD diagnostics. It has been found to have good reliability and validity (Weathers, Bovin, Sloan, Schnurr, Kaloupek & Markx, 2017). Likewise, psychometric qualities of the Dutch translation are reportedly good (Boeschoten et al., 2018). In the current study reliability was acceptable ((Reynolds & Livingston, 2012), $\alpha = 0.70$)

PTSD Checklist for the DSM-5 (PCL-5). A Dutch translation of the PCL-5 (Weathers, Litz, Keane, Palmieri, Marx & Schnurr, 2013; Dutch translation by Boeschoten, Bakker, Jongedijk & Olf, 2014) was used to quantify PTSD symptom severity at various points during the study and to measure treatment efficacy. The PCL-5 is a self-report measure consisting of 20 items that each correspond to a PTSD symptom as they are defined by the DSM-5. Items ask for the degree to which a symptom was present over the course of the past month. An example of an item is “Repeated, disturbing dreams of the stressful experience”. Responses are scored on a 5 point Likert scale from 0 (not at all) to 4 (extremely). A symptom cluster score can be obtained by adding all items per symptom cluster such as they are found in the DSM-5. Alternatively, a total severity score can be obtained by adding all items together, resulting in a range of 0-80. For both scores a higher score indicates more pronounced PTSD symptom severity.

Psychometric properties of the English PCL-5 have been found to be good (Blevins, Weathers, Davis, Witte & Domino, 2015), with scores on the measure showing strong internal consistency, test-retest reliability, convergent validity and divergent validity, as well as a good fit to various proposed DSM-5 factor structures. In the current study reliability was excellent at all

timepoints ((Reynolds & Livingston, 2012); $\alpha t1 = 0.907$; $\alpha t2 = 0.964$; $\alpha t3 = 0.971$; $\alpha t4 = 0.962$)).

Operationalization of therapist treatment adherence. In order to be able to test therapist treatment adherence sessions had to be divided into different categories of treatment. Decisions on how to define these categories were made by two researchers collaborating, resulting in 11 categories total (see Table 4). A single researcher then categorized sessions by studying patient files and treatment reports. This resulted in a score of 0-10 per category for each patient in which a higher score on a category equaled a patient having received more sessions of that treatment type. A sample of these files was then assessed and categorized by a senior researcher, after which interrater reliability was calculated.

In the interest of determining the potential impact of trauma focus on treatment effectivity the 11 categories were then combined into 5 main categories. The first category included all TFT. The second category included sessions with schematherapy and/or cognitive behavioral treatment without trauma focus. The third category included sessions in which use was made of stabilization techniques, such as safe place exercises or emotion regulation techniques. A fourth category consisted of sessions that did not take place, either because a patient decided not to participate, or because the therapist decided not to conduct a session (e.g. if the patient already obtained the estimated maximum benefits of treatment or there was a scheduling conflict on behalf of the therapist). The final category included missing data (see Table 4 in the Methods section for an overview of the component treatments per main category).

Data Analysis

In every analysis an alpha level of 0.5 was used to indicate significance. Missings were excluded listwise. Effect sizes were interpreted using criteria proposed by Cohen (1988). Reliability indexes were interpreted using the rule of thumb suggested in Reynolds and Livingston (2012). All analyses were conducted using SPSS version 24 (IBM Corp, 2015)

A **paired sample t-test** comparing PCL-5 scores at first day of treatment and final day of treatment was used to assess short term treatment effectivity of HITT. Assumptions of normality and lack of outliers were controlled for through boxplots. Both assumptions were met.

A **repeated measures ANOVA** with the independent variable time and the dependent variable PCL-5 score was used to analyze the long term effects of HITT one week post-treatment

and at one month follow-up. The assumption of normality was met, as tested by inspecting histograms and application of a Shapiro-Wilks test. Additionally, Mauchly's test of sphericity was non-significant, indicating that the assumption of sphericity was met.

The **percentage of agreement** between the categorizations made by two independent raters on which treatment type a given session contained was calculated in order to determine interrater reliability. A total of 100 sessions spread over 10 participants was evaluated.

The **percentage of adherence to protocol** was calculated in order to determine therapist treatment adherence. Calculations were based on aforementioned categorization of session types. Percentages were calculated for the percentage of sessions conducted according to protocol, as well as the percentage of each session-type that was conducted in general, and also the percentage of deviation from the prescribed timing of EMDR and exposure sessions.

The intention was to conduct a **two stage hierarchical multiple regression analysis** in order to determine the effects of TFT within HITT on the dependent variable difference score in PTSD symptom severity between first day of treatment and final day of treatment. Step 1 of this analysis would have accounted for the confounding effects of the covariates age and gender and step 2 would include the main categories described above, sans the category missing data, as predictors. Assumptions of linearity and homoscedasticity would be controlled for through of scatterplots. A P-P plot would have been used to determine whether the assumption of normally distributed residuals was met. Furthermore, assumptions of multicollinearity, independent residuals and lack of influential cases biasing the model would have been tested by calculating collinearity statistics and interpreting VIF scores, calculating Durbin-Watson statistics and calculating Cook's Distance values respectively.

Upon inspection of the data, however, it became apparent that it would be unfeasible to conduct the analysis as a result of insufficient data spread amongst the different treatment categories. As such, no analysis measuring the effect of treatment session type upon trauma symptom score within HIT could be formally conducted. In light of requirements for the Master's program this thesis is a part of, however, the analysis has been conducted and reported. Its results should be interpreted as a simple demonstration of practical skill, and the author would like to caution against interpreting these results as anything else.

Results

HITT effectivity.

In line with hypotheses, average PTSD symptom severity declined significantly from pre-treatment ($M = 56.17$, $SD = 12.78$) to one day post-treatment ($M = 40.72$, $SD = 19.67$); $t(88) = -8.89$, $p = 0.00$. The corresponding effect size was large ($d = 0.94$).

Additionally, the data showed that mean PTSD symptom severity decreased significantly between pre-treatment, one week posttreatment and one month follow-up ($F(2,22) = 3.475$, $p < 0.05$). See table 2 for an overview of mean severity scores at each time point. The corresponding effect size was large ($\eta = .240$). Pairwise comparisons of the different timepoints with Bonferroni correction were not statistically significant (see table 3).

Table 2.

Change in mean PTSD Symptom severity scores over time

| Time | Mean | Std. Error | 95% Confidence Interval | |
|------|-------|------------|-------------------------|-------------|
| | | | Lower Bound | Upper Bound |
| 1 | 50.42 | 3.46 | 42.80 | 58.03 |
| 2 | 43.33 | 5.88 | 30.40 | 56.27 |
| 3 | 36.67 | 6.14 | 23.15 | 50.19 |

Note. Time 1 refers to the first day of treatment. Time 2 refers to one week post-treatment. Time 3 refers to one month post-treatment.

Table 3.

Bonferroni corrected pairwise comparisons of differences in PTSD symptom severity over time

| (I) time | (J) time | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval for Difference | |
|----------|----------|-----------------------|------------|------|--|-------------|
| | | | | | Lower Bound | Upper Bound |
| 1 | 2 | 7.08 | 4.49 | .430 | -5.59 | 19.75 |
| 1 | 3 | 13.75 | 5.28 | .074 | -1.14 | 28.64 |
| 2 | 3 | 6.67 | 5.79 | .822 | -9.67 | 23.00 |

Note. Time 1 refers to the first day of treatment. Time 2 refers to one week post-treatment. Time 3 refers to one month post-treatment.

Interrater reliability

The percent-agreement between two independent raters on within-session treatment-type categorization equaled 90%. This is an acceptable level of agreement according to proposed criteria for a consensus-based agreement (Stemler, 2004).

Therapist treatment adherence

Inspection of the data showed that out of a total 1070 sessions, either EMDR or Exposure treatment were used for 839 sessions. This equals a therapist treatment adherence of 78.4%.

Table 4 provides an overview of the content of all categorized sessions. TFT in general made up over 90% of sessions.

Table 4.

Prevalence of different types of treatment provided within High Intensity Trauma Therapy split in main-and sub-categories

| Main category | Type of therapy provided | Number of sessions | % |
|---------------|------------------------------------|--------------------|------|
| TFT | EMDR | 658 | 61.5 |
| | Exposure | 181 | 16.9 |
| | Discussing Caseconceptualization | 51 | 4.77 |
| | tf-CBT | 79 | 7.38 |
| CBT/Schema | Schema therapy | 11 | 1.03 |
| | CBT (general) | 6 | 0.56 |
| Stabilization | Stabilizing techniques post-tft | 2 | 0.19 |
| | Stabilizing techniques without tft | 28 | 2.62 |
| No session | No session (therapist decision) | 23 | 2.15 |
| | No session (patient decision) | 8 | 0.75 |
| Missing | Missing | 23 | 2.15 |

Note. Total number of sessions studied was 1070. TFT is Trauma focused therapy, CBT is cognitive behavioral therapy, tf-CBT is trauma focused cognitive behavioral therapy, EMDR is eye movement desensitization and reprocessing, Missing indicates no report of the session exists. % indicates the percentage of the total amount of categorized sessions belonging to a category.

Where non-TFT deviation occurred, it was spread relatively evenly over the categories.

Use of stabilizing techniques and no session occurring were the most common types of

deviation. The majority of sessions that did not take place were cancelled by the therapist. Stabilizing techniques were used more commonly without prior in-session use of TFT than post-TFT. Missing data most often concerned missing reports of the final session of the week.

Deviation from the prescribed timing of EMDR and exposure sessions occurred in 35 sessions. EMDR was substituted for exposure 33 times, with most of the deviations occurring on day 4 (21 sessions). 2 sessions substituted Exposure for EMDR.

Impact of trauma focus of treatment sessions within the HITT¹

The first stage of the hierarchical multiple regressions demonstrated no significant predictive value of age and gender to the difference in symptom severity from pre-treatment to one day post-treatment, $F(2,88)= 1.15, p=0.322$. These variables explained 2.6% of variation in the model. The addition of the 4 main category variables TFT, CBT/Schema, stabilizing techniques and no-session in stage 2 explained an additional 2.5 % of variance. This contribution was not significant either, $F(6,88)=0.74, p=0.621$ (See table 5).

Table 5.

ANOVA Results of the Two Stage Hierarchical Regression Analysis

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|------------|----------------|----|-------------|-------|-------------------|
| 1 ^a | Regression | 614.771 | 2 | 307.385 | 1.147 | .322 ^b |
| | Residual | 23039.252 | 86 | 267.898 | | |
| | Total | 23654.022 | 88 | | | |
| 2 ^b | Regression | 1214.892 | 6 | 202.482 | .740 | .619 ^c |
| | Residual | 22439.131 | 82 | 273.648 | | |
| | Total | 23654.022 | 88 | | | |

Note. df means degrees of freedom. F is the calculated value of the Analysis of Variance (ANOVA); Sig. means significance.

^aPredictors: (constant), age, gender;

^bPredictors: (constant), age, gender, TFT, CBT/Schema, Stabilizing techniques, No session;

Dependent variable: Difference between T2 (last day of treatment) and T1 (first day of treatment).

Discussion

The current study set out to study protocol adherence within and effectivity of a five day high intensity inpatient program for PTSD consisting of 8 sessions of EMDR and 2 sessions of exposure therapy. Furthermore, an attempt was made to study the effect of different types of therapies used on treatment effectivity.

¹There was insufficient spread of sessions over the different therapies observed to conduct this analysis. The results are reported here regardless as a demonstration of practical skill for the Master's program this thesis is a part of.

As was hypothesized, HITT treatment led to a reduction in PTSD symptom severity on both short and long term. This reaffirms earlier findings that the high intensity treatment format is effective when applied to the treatment of PTSD (e.g. Bongaerts et al., 2017; Zepeda Mendez, et al., 2018) . One should note, however, that the findings on long term effectivity in the current research were based on a rather small group of participants. The follow-up range was also relatively short, only following patients for a duration of one month. Nonetheless, results are promising.

The hypothesis that therapists would deviate from protocol was validated. However, the observed deviations were infrequent. Furthermore, the majority of deviations consisted of a type of TFT. As such, most patients still received a full week of intensive trauma therapy. Whether these findings reflect a larger trend in protocol adherence within (trauma)therapies or are a consequence of factors inherent to the high intensity format is as of yet unclear. It might be, for example, that the short duration of HITT leaves less opportunity for stressful life events to interfere in treatment. As Erikson and colleague's (2015) suggested the greater number of events that occur in between sessions if they are scheduled less frequently may become too many to address in a single session effectively, and the probability of new issues arising that interrupt the continuity of previous in- and out-of-office problem-solving activities might increase. Erikson et al. (2015) made this observation whilst discussing weekly and fortnightly sessions, but one can imagine this being equally true for consecutively scheduled session.

Another factor which might have contributed to the high degree of protocol adherence are characteristics of the study sample. At referral and at intake patients were selected to ensure they met several criteria, such as motivation to engage in an intensive therapy and exclusion of particularly vulnerable individuals. As such one can wonder whether the high degree of protocol adherence is purely a result of the high intensity format, or whether certain characteristics of the study sample might have contributed as well. This requires further study.

A final note of interest concerning the deviations observed is that the amount of sessions that could not be conducted because a patient proved to be unable or unwilling to participate was very small. Furthermore, no patients quit during the high intensity program because of distress. This speaks well for the tolerability of the high intensity format. As was mentioned previously, however, patients were carefully selected to ensure their suitability for HITT. Furthermore, aside from symptom severity no measurements regarding patient distress were taken post-treatment.

The long term tolerability thus requires further research which accounts for such patient characteristics.

The current research had several limitations that could be improved upon. One such point is the use of the PCL-5 one month version at all measurement points in the study. As the pre- and-posttreatment measurements were but a single week apart this means there is significant risk of overlap in measured symptom severities. The same goes for the one week post-treatment measurement. While results on average still show a reduction in symptoms, it would be prudent to control for these results using a questionnaire with a shorter reporting term in future studies, such as the one week version of the PCL-5.

Another adjustment worth considering is the inclusion of a longer follow-up period. As mentioned above a follow-up measurement was included, however, it is necessary to confirm the robustness of the observed effects over a larger timespan, such as a year or longer, before any conclusive statement can be made. Similarly, a larger sample-size for follow-up is necessary as the current results are based on a comparatively small sample of 18 patients.

Finally, there was insufficient spread in the data to allow for any valid analysis of the impact of the amount of TFT sessions on symptom severity. This was a risk inherent to the chosen design. Future research into the effectivity of different (trauma-focused) therapies in a high intensity setting might chose to run a randomized controlled trial (RCT) to avoid this difficulty. Using this format, a researcher can create different groups that will exclusively employ one type of therapy in a high intensity format to study comparative effectiveness. Ideally, such a study would also include treatment as usual conditions for these therapies for comparison. Not only would conducting an RCT avoid the uncertainty about data spread inherent to the current design, it would also allow for stricter control of confounding variables. It is the author's belief that such a study could provide valuable contributions to our knowledge of PTSD treatments and the rapidly developing field of high intensity treatments.

Regardless of its limitations the current research has several practical applications. For one, the study further contributes to a growing body of research that indicates TFT in a high intensity format is effective in reducing PTSD symptom severity. The inclusion of a therapist treatment adherence analysis further reinforces this by allowing a closer look at the factual make-up of the intervention implementation. Additionally, the high amount of therapist treatment adherence to protocol that was found hints at several practical advantages to the high intensity

format, such as limited interference from outside events and good tolerability of the prescribed treatment.

To conclude, the current study replicated earlier findings that high intensity trauma-focused therapies are effective in treating PTSD and seem to carry several advantages over regularly spaced therapies. It is imperative that we continue to develop these therapies. The next step will be to optimize these promising treatments through continued applied research.

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