Efficacy of Narrative Writing as an Intervention for PTSD: Does the Evidence Support Its Use?

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Abstract

Although a number of effective psychotherapies for posttraumatic stress disorder (PTSD) are available, there is a need to develop alternative treatments for those who may not respond optimally to these treatments or who may not have access to clinicians who can competently deliver them. Narrative writing, which involves repeated recounting about a traumatic event in writing, is one treatment that deserves further examination as a potential alternative. In this paper, we describe the most commonly used narrative writing treatment protocols for those with either a diagnosis of PTSD or probable PTSD and discuss the available efficacy data for each of these protocols. We conclude with recommendations for using narrative writing to treat those with PTSD and offer recommendations for future work in this area.

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Over the past several decades, a number of treatments for posttraumatic stress disorder (PTSD) have been developed, tested, and found to effectively reduce symptoms for many who receive these treatments (Institute of Medicine 2007; VA/DOD 2010). Unfortunately, a considerable minority of those who receive these treatments either drop out before they experience treatment benefits or do not experience clinically meaningful symptom reductions despite receiving a sufficient treatment dose (Hoge et al. 2014; Imel et al. 2013).These treatments also may only be available to those with access to appropriately trained service providers (Sloan et al. 2011a). Accordingly, alternative effective PTSD treatments that promote adherence and increase access are needed. Narrative writing is one viable treatment alternative (Hoge 2011). Narrative writing involves a person repeatedly recounting a traumatic event that they have experienced. There are a number of available PTSD treatment protocols that feature narrative writing. However, these protocols differ in the manner in which narrative writing is used to treat PTSD. In this paper, we will describe several different narrative writing protocols that have been frequently investigated and we will review the evidence for their use with those who suffer from PTSD. The paper will conclude with a discussion how narrative writing might be used in clinical practice and provide suggestions for future research.

Narrative writing is included as a part of other PTSD treatment protocols, such as Cognitive Processing Therapy (CPT; Resick and Schnicke 1993) and trauma-focused cognitive behavioral treatment for children and adolescents (TF-CBT; Cohen et al. 2006). However, narrative writing in these treatment protocols is one of many treatment components. Because the focus of this paper is the primary use of narrative writing as an intervention for PTSD, we will describe interventions that primarily consist of narrative writing.

Although a large number of narrative writing studies have included PTSD symptom severity as a treatment outcome, a smaller proportion have included individuals diagnosed with PTSD or who had probable PTSD (i.e. likely meets PTSD diagnostic criteria based on a cut off score on a PTSD self-report measure). As we are interested in the efficacy of narrative writing as an intervention for PTSD, only studies that included participants that had PTSD or probable PTSD will be reviewed.

Narrative Writing Protocols

The efficacy of narrative writing as a treatment for PTSD has been investigated using several protocols. The most well-studied of these include interapy (also referred to as structured writing therapy), written disclosure (also referred to as expressive writing), and narrative exposure therapy (NET).

Interapy

Interapy is a structured writing therapy that is typically conducted via the internet. The standard protocol consists of 10, 45-minute writing sessions, with sessions typically conducted twice a week over a 5 week period (Lange et al. 2000). The writing protocol is divided into three phases. The first phase consists of four writing sessions, during which the individual writes in detail about a traumatic event they experienced and their thoughts and

feelings regarding the event. In the second phase, which focuses on cognitive reappraisal, the individual provides encouraging advice to a hypothetical friend who experienced a similar traumatic event. Specifically, the writer instructs this hypothetical friend to consider what he or she might learn from the traumatic event that could have a positive outcome on his/her life. The third phase involves obtaining closure with the event. To do this, the writer shares details about the event they experienced with someone close. Prior to this phase, individuals are informed that social support is important in recovering from PTSD and that sharing such information can result in improved social support. Individuals are next instructed to write about how they might move forward in their lives given what they have learned as a result of the traumatic event. Writers submit each of their written narratives online and receive feedback on each writing assignment from a trained therapist as they advance through the treatment.

Although a number of studies have examined the efficacy of Interapy, only two studies have examined its effects on those with confirmed or probable PTSD (see Table 1). Knaevelsrud and Maercker (2007) assigned participants to either 10 sessions of Interapy delivered via the internet or a waitlist control condition. Findings indicated significant reductions in self-reported PTSD symptoms relative to the waitlist control condition (Hedge's $g = .93$). Moreover, only 16 % of the participants dropped out of treatment, which compares favorably with evidence-based PTSD treatments that have dropout rates of approximately 30 % (Imel et al. 2013). Considering that participants never met in person with a therapist, the relatively low dropout rate is even more remarkable. However, enthusiasm for the findings is dampened by the use of a self-report treatment outcome measure and the use of a waitlist comparison condition.

The second study that examined the Interapy protocol was conducted by van Emmerik et al. (2008). Participants were randomly assigned to an in person form of Interapy called structured writing therapy (SWT), cognitive behavioral treatment (CBT), or a waitlist comparison condition. Findings indicated that there was no significant difference in PTSD symptom severity at post-treatment between the CBT and SWT conditions. However, compared with the waitlist condition, both CBT and SWT had significant reductions at post-treatment and follow-up assessment, with a medium to large between-group effect size (Hedge's $g = .69$). The overall treatment dropout rate was 32 % which is similar to dropout rates for evidence-based PTSD treatments (Imel et al. 2013).

An important limitation of the van Emmerik et al. study is that the time frame between pre-treatment assessment and follow-up assessments varied considerably across participants and across the conditions, with a significantly longer time frame for the CBT condition relative to the waitlist condition. The group difference in timing of the assessments complicates interpretation of the findings as the length of time between assessment points could have impacted outcome findings. Moreover, the number of sessions provided to participants considerably varied depending on whether or not they were considered to suffer from chronic PTSD, with those suffering from more chronic PTSD receiving a substantially greater number of treatment sessions. Nonetheless, the clear strength of this study is the inclusion of an active comparison condition along with a waitlist comparison condition. The medium to large effect for SWT, relative to the waitlist condition, and non-significant

difference between SWT and CBT conditions provides support for using SWT with individuals who suffer from PTSD. Moving forward, it would be useful to determine the number of treatment sessions (i.e., treatment dose) needed to produce optimal effects. It would also be useful to examine the extent to which outcomes vary when this treatment is provided via the internet versus in person.

To summarize, based on the results of two studies, Interapy shows promise as a treatment for PTSD. However, only two studies have been conducted with a PTSD or probable PTSD sample and these studies varied considerably in terms of the content and delivery method (i.e., internet versus in person) of the treatment protocols. The findings of van Emmerik and colleagues are noteworthy as they indicate that Interapy might be a viable treatment option for individuals who are unable to present to treatment in person. The potential to use the Internet to deliver treatment has great appeal given that many individuals in need of treatment live in remote areas and may not have access to trained trauma therapists (Sloan et al. 2011b).

Written Disclosure

Written disclosure (also referred to as expressive writing) was developed by Pennebaker and Beall (1986) and has been extensively studied by numerous investigators (see Frattaroli 2006 for a review). In the original written disclosure procedure, individuals write about a traumatic or stressful event for 20 min on three separate occasions. The instructions for writing vary slightly each day with the first day's instructions focusing on writing a detailed account of the event along with the thoughts and feelings one had during and immediately after the event. Instructions for the second session request continued writing about the details of the event and then a description of the impact that the event has had on one's life. The third and final writing session encourages the writer to ''wrap up'' his/her description and feelings about the event as well as how he/she believes his/her future is affected by the event. Although writers are also permitted to write about the same event or different events on each writing occasion, Sloan et al. (2005) found that writing about the same traumatic event each session resulted in significantly greater reductions in PTSD symptom severity relative to writing about different traumatic events at each session.

Many studies have examined the beneficial outcome associated with written disclosure (see, Frattaroli 2006). However, as can be seen in Table 2, only seven published studies have investigated the efficacy of written disclosure with individuals who either met diagnostic criteria for PTSD or had probable PTSD. Three written disclosure studies instructed participants to write about their traumatic experience for three, 20 min sessions. All three of the studies had very low dropout rates (0 % Gidron et al. 1996; 0 % Possemato et al. 2011; 7 % Smyth et al. 2008). Two of the three studies found no significant group differences at post-treatment between participants assigned to written disclosure and those assigned to the control condition (between group Hedge's *g* ranging from .02 to .23). The other study (Gidron et al. 1996) found participants assigned to written disclosure reported an *increase* in PTSD symptoms at post-treatment assessment relative to participants assigned to the control writing condition. Of note, the study investigators substantially altered the written disclosure procedures, such that participants were asked to verbally describe their trauma event

following their third writing session. This alteration may have been responsible for the increase in PTSD symptoms given that no written disclosure study had use this procedure and a single session of verbally recounting the trauma event may have resulted in an increase of PTSD symptoms. The findings of these three studies are surprising given that written disclosure has been found to be efficacious in producing beneficial psychological outcome among individuals with trauma histories (Frattaroli 2006). However, these results may suggest that three, 20 min writing sessions may not be sufficient to produce successful treatment outcome effects among individuals with PTSD.

Sloan et al. (2011a) directly examined this possibility. Specifically, these investigators used three, 20 min writing sessions with individuals who met diagnostic criteria for PTSD. Participants either wrote about their traumatic event or wrote about a neutral topic each session. In addition, heart rate and self-reported emotion was collected at each session to investigate whether extinction of fear responding occurred. Findings indicated that there was no significant reduction in PTSD symptoms relative to a control writing condition for participants who met diagnostic criteria for PTSD. Results also showed that, relative to those assigned to the control writing condition, participants in the disclosure condition experienced significant increases in physiological and self-reported arousal during the first writing session, an indication of fear network activation previously hypothesized by some to be necessary but not sufficient for successful PTSD treatment (Foa and Kozak 1986). These findings support the notion that that three, 20 min writing sessions are not a sufficient enough of a dose needed to yield clinically significant results.

Based on the results of this study, Sloan et al. (2012) modified the written disclosure procedure to include five, 30 min writing sessions. In addition, psychoeducation (an additional 20 min) and treatment rationale (an additional 10 min) components were included in the first session (as all evidence-based PTSD treatments include these as parts of their protocols in order to enhance treatment engagement and motivation (Hamblen et al. 2009). The first three sessions involved the participant writing a detailed account of their trauma event, including a description of their thoughts and feelings while the trauma event occurred. The last two sessions shifted to writing about the impact the event had on their lives. Using the expanded protocol, referred to as written exposure therapy (WET), Sloan et al. (2012) found that PTSD participants randomized to the WET condition reported a significant reduction in PTSD symptom severity relative to participants randomized to a waitlist condition (between group Hedge's $g = 3.47$). Moreover, the treatment dropout rate was only 9 % and participants reported high levels of satisfaction with the treatment.

Using the expanded WET protocol, Sloan et al. (2013) found that a small sample ($n = 7$) of veteran participants diagnosed with chronic PTSD showed substantial reductions in PTSD symptom severity from pre- to post-treatment and these treatment gains were maintained at a 3 months follow-up (within group Hedge's $g = 1.08$). Similar to the findings from Sloan et al. (2012), the treatment dropout rate was low and veteran participants indicated high levels of treatment satisfaction, suggesting this treatment is not only effective across settings and different levels of PTSD severity, but is also well tolerated by participants.

In an open trial design, Bragdon and Lombardo (2012) also used an expanded version (i.e. greater number of writing sessions) of the written disclosure procedure with inpatient participants diagnosed with PTSD and comorbid substance use disorder. Similar to Sloan et al. (2012, 2013), significant within-group reductions in PTSD symptom severity were observed at follow-up (within group Hedge's g = 1.56). Treatment dropout rate was 27 % but dropout was due to hospital discharge. Limitations of the study include the lack of a comparison condition and concurrent psychotherapy and psychotropic medication on the inpatient unit.

Taken together, these findings suggest that written disclosure may be efficacious if more than three sessions of 20 min or longer are used. Importantly, individuals report high levels of treatment satisfaction and the treatment is associated with low dropout rates. These findings are intriguing given that the written disclosure protocol involves substantially fewer sessions than evidence-based PTSD treatments and includes no homework assignments between sessions. Thus, the approach may be more cost effective for both the client and the therapist than currently available evidence-based PTSD treatments. Despite these promising findings, it is important to highlight that only a handful of studies have investigated this treatment approach and when a comparison condition was included it was either a control writing condition in which participants wrote about neutral topics (Gidron et al. 1996; Possemato et al. 2011; Sloan et al. 2012; Smyth et al. 2008), or a waitlist control condition (Sloan et al. 2012). It will be important to compare written disclosure protocol with an active treatment comparison condition for a more rigorous investigation of treatment efficacy. This type of noninferiority clinical trial design is currently underway.

Narrative Exposure Treatment

Narrative exposure therapy (NET) is a treatment approach that is based on both cognitive behavioral treatment of PTSD and testimony therapy (Cienfuegos and Monelli 1983). As can be seen in Table 3, the number and duration of sessions varies considerably across studies (see Robjant and Fazel 2010, for a review). Despite the variation in number of sessions, all variations of the treatment protocol consists of the trauma survivor providing a narration of their life starting from birth to present, with a particular focus on traumatic experiences. The narration is provided to a therapist (Robjant and Fazel 2010) who transcribes and guides the trauma survivor through the autobiographical account. Thus, level of therapist involvement is differs substantially from that in the Interapy and written disclosure protocols.

NET was originally developed for use in developing countries but it has more commonly been used with asylum seekers and refugees (Robjant and Fazel 2010). A unique feature of NET is that individuals do *not* write about their traumatic event in isolation. Rather, they recount their traumatic events within the context of their entire lives, although greater focus of their autobiographical account is placed on the traumatic experiences.

Table 3 provides the summary information for the studies that examined the efficacy of NET with PTSD or probable PTSD samples. As can be seen in Table 3, the NET protocol has been investigated more frequently with PTSD samples than any other narrative treatment

protocol. In addition, NET has been investigated using both open trials and randomized controlled trials. Two studies used an open trial design (Halvorsen and Stenmark 2010; Onyut et al. 2005) and both studies observed significant reductions of PTSD symptom severity at follow-up assessment (within group Hedge's g of .73 and 2.57).

Thirteen studies used a randomized controlled trial design with a variety of comparison conditions. Three studies (Hijazi et al. 2014; Ruf et al. 2010; Zang et al. 2013) examined the efficacy of NET relative to a waitlist comparison condition. All three studies found a significant reduction in PTSD symptom severity at follow-up for the NET condition relative to the waitlist condition (between group Hedge's g of .38, .62, and 1.58, respectively). Using a more rigorous research design, five studies compared NET with either a psychoeducation condition (Bichescu et al. 2007), treatment as usual condition (Neuner et al. 2010; Stenmark, Catani, Neuner, Elbert, & Holen, 2013), a meditation/relaxation condition (Catani et al. 2009), or an academic catch up plus supportive counseling condition in addition to a waitlist control condition (Ertl et al. 2011). All but one (Catani et al. 2009) of the five studies found significantly greater reductions in PTSD symptom severity at follow-up assessment for the NET condition relative to the other treatment conditions (between group Hedge's g ranging from .31 to 1.41).

Four additional studies included an active treatment comparison condition. Schaal et al. (2009) randomized 26 child participants diagnosed with PTSD to either NET or Interpersonal Psychotherapy. No significant group differences were observed at post-treatment (Hedge's g = .26). However, at a 6 months follow-up assessment participants assigned to NET displayed significantly greater PTSD symptom reductions relative to those assigned to Interpersonal Therapy. Hensel-Dittman and colleagues (2011) randomly assigned 28 individuals diagnosed with PTSD to either NET or Stress Inoculation Therapy (SIT). Findings indicated significantly greater PTSD symptom reduction for the NET condition relative to the SIT condition at 6 months follow-up (Hedge's g = .25). Moreover, the PTSD treatment gains were maintained 1 year later. Neuner and colleagues (2004) compared NET to a supportive counseling condition and a psychoeducation condition using a total sample of 43 Ugandan refugees diagnosed with PTSD. The NET and supportive counseling condition consisted of four sessions whereas psychoeducation condition consisted of a single session. At post-treatment there was no significant difference in PTSD symptom severity for participants assigned to NET condition compared with the supportive counseling (Hedge's g = .06) and the psychoeducation condition (Hedge's g = .20). However, at one-year follow-up, only 29 % of participants in the NET condition met diagnostic criteria for PTSD compared with 79 % of participants in the supportive counseling condition and 80 % of the participants in the psychoeducation condition. Lastly, Pabst et al. (2014) examined the efficacy of NET with a sample diagnosed with comorbid PTSD and borderline personality disorder. Participants were randomly assigned to either NET or a standard treatment for borderline personality disorder. Although all participants displayed significant reductions in PTSD symptom severity at follow up assessment, no significant treatment condition differences were obtained (Hedge's g = .10).

One additional study that examined the efficacy of NET with participants diagnosed with PTSD used lay counselors trained to implement NET rather than expert therapists (Neuner et

al. 2008). Another interesting aspect of this study is that a flexible trauma counseling condition was included as a comparison condition with the rationale that the NET protocol would not likely be strictly adhered to when used outside of the research context. The trauma counseling condition permitted lay counselors to use the NET protocol more flexibly on the basis of what they perceived to be the specific needs for a given participant. A monitoring only comparison condition was also included. The NET and trauma counseling conditions both consisted of six sessions that were between 1 and 2 h long. Both treatment conditions resulted in significantly greater PTSD symptom reduction at post-treatment assessment relative to the monitoring only condition, but the NET and trauma counseling conditions did not significantly differ from each other. This study is important as it demonstrates that NET can be implemented by trained peers, which is of particular value in settings in which there is a shortage of trained therapists. Moreover, the findings indicate that the NET protocol continues to be beneficial even when used flexibly, as would likely happen in clinical practice.

To summarize, the evidence supporting NET is strong given the significant between group effects obtained when it has been compared with active treatment approaches. It is also notable that lay counselors can be trained to implement the protocol and treatment dropout rates are remarkably low. The variation across studies in the number of sessions and duration of sessions should be noted. Nonetheless, the brief session format (e.g., 4–6 sessions) appears to result in beneficial outcome that is comparable with studies that have used a greater number of sessions (e.g., 10 sessions). It would be important to directly examine whether 10 sessions of NET is as beneficial as four sessions. If evidence supports a brief version of this treatment, then it would have a clear advantage over other evidence-based treatments for PTSD that require more sessions. Notably, the treatment dropout rate is less than 20 % for NET in all but one (Stenmark et al. 2013) of the 15 studies conducted (see Table 3).

NET has distinct protocol differences relative to both Interapy and written disclosure treatment protocols. Specially, NET involves the use of a therapist who guides the trauma survivor through the narrative process and the therapist transcribes the account provided by the trauma survivor. It would be important for future studies to investigate the role and impact of the therapist involvement in NET.

Summary of Findings and Future Directions

Although the findings for the use of narrative writing for PTSD are promising, a limited number of studies have been conducted and the majority of these studies have used a waitlist or similar type comparison condition. To provide a more rigorous test of the efficacy of narrative writing for PTSD, studies need to include active treatment comparison conditions (Schnurr 2007). Of all the narrative writing protocols, NET has the strongest empirical support, although the number of sessions and duration of sessions in NET has varied considerably across studies. It would be important to directly compare NET to standard PTSD treatment approaches, such as Prolonged Exposure and CPT, to investigate if NET is equally effective as these standard approaches and whether there are differences in cost

effectiveness. Future research is also needed to know whether the brief version of NET is equally efficacious relative to the more intensive protocol.

The findings also indicate that more than three sessions of 20 min duration is necessary for beneficial outcome with PTSD individuals using the written disclosure protocol. None of the studies examining written disclosure have included an active treatment comparison condition, although one study using this type of design is currently underway. The examination of written disclosure protocol relative to an active treatment comparison condition is needed before this narrative writing protocol can be recommended as a treatment approach for PTSD. Nonetheless, the efficacy findings obtained to date are encouraging, especially considering the low burden on participants and therapists in combination with the low treatment dropout rate. Interapy has the distinct advantage of being a telehealth approach. However, only one study examined Interapy with PTSD participants using an Internet delivery approach. Additional studies are also needed, including studies that use active treatment comparison conditions.

Although there is some evidence that exposure is an underlying mechanism of narrative writing treatment for PTSD (Sloan and Marx 2004; Sloan et al. 2005, 2007), we know relatively little about the mechanism of action in narrative writing protocols. It is likely that more than one mechanism may account for the beneficial outcome associated with narrative writing protocols. For instance, cognitive processes are likely to take place as the protocols ask that individuals write about the meaning and impact the traumatic event has had on their lives. Indeed, change in negative cognitions has been found to predict successful treatment outcome in Prolonged Exposure treatment (Zalta et al. 2014). There is a clear need to investigate multiple potential underlying mechanisms of PTSD treatment protocols using multiple methods of assessment (e.g., coding of psychotherapy processes, psychophysiological measurement, self-report). Greater understanding of critical mechanisms of PTSD treatment will lead to more treatments becoming more effective and efficient.

Should Narrative Writing be Used as an Intervention for PTSD in Clinical Practice?

Although the findings appear promising, at the present time, there is insufficient evidence to support the use of Interapy and written disclosure as a treatment for PTSD. Additional research investigating the efficacy of these protocols using a treatment comparison condition is needed before these protocols could be recommended for clinical practice. However, writing about the traumatic event may be a useful approach for individuals who find it difficult to describe the trauma event out loud to their therapists. In addition, completing a written trauma account is an assignment within the CPT protocol (Resick and Schnicke 1993) and patients sometimes find it difficult to complete their trauma account in between sessions. The findings of high tolerability for written disclosure studies suggest that completing the trauma accounts in a clinic may be more tolerable than having patients complete these assignments on their own between sessions.

The evidence supporting the use of NET with individuals diagnosed with PTSD is strong. However, as previously noted, it would be important to know if NET is equally effective as currently available evidence-based PTSD treatments, such as Prolonged Exposure therapy. Nonetheless, NET appears to be an effective approach in situations in which a large number of people need to be treated at the same time (e.g., natural disasters).

The evidence supporting the efficacy of narrative writing as an intervention for PTSD is promising but additional investigation is needed before narrative writing can be recommended for the treatment PTSD. The potential to use narrative writing via the Internet and its potential to be effectively delivered with trained lay counseling has particular appeal. Moreover, findings to date also indicate that narrative writing is well-tolerated and participants report high levels of satisfaction with the treatment. Overall, narrative writing as a treatment for PTSD is a very promising alternative treatment approach that should continue to be explored.

Acknowledgments

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Table 1

Interapy studies

Author	Year	Sample	Sample size	# Sessions/mins treatment	PTSD Outcome measure	% Dropout	Mean (SD) Pre	Mean (SD) Post/follow-up	Effect size (Hedge's g) Within	Effect size (Hedge's g) Between
Knaevelsrud and Maercker	2007	Probable PTSD	N = 96 Interapy n = 49 WL n = 47	10 sessions of 45 min	IES-R (Intrusions)	Interapy = 16 % WL = 2%	Interapy = 23 (6.4) WL = 23.3 (7.89)	Interapy = 12.3 (8.7) WL = 20.7 (9.2)	1.40 .31	.93
van Emmerik et al.	2008	Full PTSD	N = 125 SWT n = 44 CBT n = 41 WL n = 40	3 sessions of 90 min	IES-R (Total)	Missing data[a]	SWT = 47.87 (13.82) CBT = 46.40 (12.32) WL = 49.14 (14.66)	SWT = 34.32 (22.58) CBT = 32.00 (20.32) WL = 45.66 (13.65)	.72 .86 .25	SWT vs. CBT = .11 (SWT & CBT) vs. WL = .69

WL waitlist, IES-R impact of events scale-revised, CBT cognitive behavior therapy, SWT structured writing therapy

[a] Data not available; not reported in the publication and unable to obtain from corresponding author

Table 2

Written disclosure studies

Author	Year	Sample	Sample size	# Sessions/mins treatment	PTSD outcome measure	% Dropout	Mean (SD)		Effect size (Hedge's g)	
							Pre	Post/follow-up	Within	Between
Bragdon and Lombardo	2012	Full or sub-threshold PTSD	N = 68	4 sessions of 30 min	MPSS	WD = 27 %	WD = 74.1 (21.3)	WD = 38.8 (24.4)	1.56[a]	N/A
Gidron et al.	1996	Probable PTSD	N = 14 WD = 8 Control writing group = 6	Write for 20 min for 3 consecutive days	IES	WD = 0% Control writing group = 0%	WD = 40.0 (5.5) Control writing group = 39.7 (18.3)	WD = 40.9 (16.1) Control writing group = 27.3 (21.6)	.07 .62	.68
Possemato et al.	2011	Full or sub-threshold PTSD	N = 31 WED n = 15 Control writing group n = 16	3 sessions of 20 min	PCL-M	WED = 0% Control writing group = 31 %	WED = 45.71 (13.15) Control writing group = 49.00 (15.33)	WED = 44.64 (11.87) Control writing group = 44.42 (13.67)	.08 .33	.02
Sloan et al.	2013	Full PTSD	N = 7	5 sessions of 60 min	CAPS	WD = 14 %	WD = 63.42 (19.14)	WD = 42 (20.49)	1.08	N/A
Sloan et al.	2011a	Full PTSD	N = 47 WED n = 24 Control writing group n = 23	3 sessions of 20 min	PSS-I	WED = 4% Control writing group = 4%	WED = 24.8 (5.5) Control writing group = 25.2 (5.2)	WED = 16.0 (18.2) Control writing group = 15.0 (7.2)	.66 1.62	.07
Sloan et al.	2012	Full PTSD	N = 46 WET n = 22 WL n = 24	5 sessions of 40–60 min	CAPS	WET = 9% WL = 0%	WET = 62.91 (16.51) WL = 70.63 (18.52)	WET = 19.18 (11.01) WL = 73.12 (18.35)	3.12 .14	3.47
Smyth et al.	2008	Full PTSD	N = 25 WED n = 15 Control writing group = 10	3 sessions of 20 min	PSS-I	WED = 7% Control writing group = 0%	WED = 13.33 (3.33) Control writing group = 12.60 (3.75)	WED = 11.08 (4.39) Control writing group = 9.87 (6.22)	.58 .53	.22

TAU treatment as usual, *WD* written disclosure, *WED* written emotional disclosure, *WET* written exposure therapy, *WL* waitlist, *MPSS* modified PTSD symptom scale, *PDS* posttraumatic diagnostic scale, *PTDS* posttraumatic diagnostic scale, *PTSDTOT* Davidson PTSD scale, *PCL-M* PTSD checklist-military, *PTSDGI* posttraumatic growth inventory, *CAPS* clinician administered PTSD scale, *PSS-I* PTSD symptom scale-interview

[a] Effect size based on completer data because ITT was not reported

Table 3

Narrative exposure studies

Author	Year	Sample	Sample size	# Sessions/mins of treatment	PTSD outcome measure	% Dropout	Mean (SD) Pre	Mean (SD) Post/follow-up	Effect size (Hedge's g) Within	Effect size (Hedge's g) Between
Bichescu et al.	2007	Full PTSD	N = 18, NET n = 9, PED n = 9	5 sessions of 120 min	CIDI	NET = 0%, PED = 0%	NET = 11.8 (1.6), PED = 11.4 (3.0)	NET = 5.4 (1.3), PED = 9.9 (4.1)	4.39, .42	1.41
Catani et al.	2009	Full PTSD	N = 31, KIDNET n = 16, MED-RELAX n = 15	6 sessions of 60–90 min	UPID	KIDNET = 0%, MED-RELAX = 0%	KIDNET = 37.94 (14.8), MED-RELAX = 36.58 (14.9)	KIDNET = 12.41 (14.15), MED-RELAX = 12.59 (11.06)	1.76, 1.83	.01
Ertl et al.	2011	Full PTSD	N = 85, NET n = 29, Academic catch-up + SC n = 28, WL n = 28	8 sessions of 90–120 min	CAPS	NET = 0%, Academic catch-up + SC = 0%, WL = 0%	NET = 67.03 (14.74), Academic catch-up + SC = 62.54 (13.87), WL = 63.61 (16.42)	NET = 46.73 (19.24), Academic catch-up + SC = 45.67 (21.53), WL = 52.93 (20.83)	1.19, .93, .57	NET vs. Academic catch-up + SC= .05, NET vs. WL = .31
Halvorsen and Stenmark	2010	Full PTSD	N = 16	10 sessions of 90 min	CAPS	NET = 0 %	NET = 84.81 (13.85)	NET = 67.5 (30.52)	.73	N/A
Hensel-Dittmann et al.	2011	Full PTSD	N = 28, NET n = 15, SIT n = 13	10 sessions of 90 min	CAPS	NET = 20 %, SIT = 15 %	NET = 96.47 (15.89), SIT = 85.15 (12.95)	NET = 76.73 (26.19), SIT = 82.60 (18.80)	.91, .16	.25
Hijazi et al.	2014	Probable PTSD	N = 63, NET n = 41, WL n = 22	3 sessions of 60–90 min	PTGI	NET = 5%, WL = 0%	NET = 45.78 (23.85), WL = 47.68 (22.66)	NET = 51.22 (25.40), WL = 41.86 (21.73)	.22, .26	.38
Neuner et al.	2010	Full PTSD	N = 32, NET n = 16, TAU n = 16	Median 9 sessions of 120 min	PDS	NET = 13 %, TAU = 0%	NET = 38.9 (6.4), TAU = 36.9 (8.0)	NET = 26.0 (9.2), TAU = 34.1 (6.1)	1.63, .39	1.01
Neuner et al.	2008	Full PTSD	N = 277, NET n = 111, TC n = 111, MG n = 55	6 sessions of 60–120 min	PDS	NET = 4%, TC = 20 %, MG = 0%	NET = 25.9 (13.2), TC = 26.7 (12.5), MG = 21.3 (10.6)	NET = 5.4 (6.6), TC = 5.3 (5.7), MG = 10.1 (8.1)[b]	1.96, 2.2 1.19[b]	NET vs. TC = .02, NET vs. MG = .55[b]
Neuner et al.	2004	Full PTSD	N = 43, NET n = 17, SC n = 14, PED n = 12	4 sessions of 90 min	PDS	NET = 0%, SC = 14 %, PED = 0%	NET = 25.2 (7.4), SC = 22.0 (8.0), PED = 19.5 (8.0)	NET = 19.1 (11.7), SC = 19.8 (10.9), PED = 21.2 (9.4)	.62, .23, .19	NET vs SC = .06, NET vs PED = .20
Onyut et al.	2005	Full PTSD	N = 6	4–6 sessions of 60–120 min	CIDI	KIDNET = 0 %	KIDNET = 14.3 (1.9)	KIDNET = 9.0 (2.2)	2.57	N/A
Pabst et al.	2014	Full PTSD	N = 22, NET n = 11, TBE = 11	Mean 17 sessions of 90 min	PDS	NET = 18 %, TBE = 27 %	NET = 36.7 (5.9), TBE = 36.9 (5.9)	NET = 29.0 (9.2), TBE = 27.8 (13.8)	.99, .86	.10

Author	Year	Sample	Sample size	# Sessions/mins of treatment	PTSD outcome measure	% Dropout	Mean (SD)		Effect size (Hedge's g)	
							Pre	Post/follow-up	Within	Between
Ruf et al.	2010	Full PTSD	N = 26 KIDNET = 13 WL = 13	Mean 8 sessions of 90–120 min	UPID	KIDNET = 8% WL = 0%	KIDNET = 43.3 (12.3) WL = 38.3 (8.6)	KIDNET = 22.3 (18.6) WL = 33.8 (17.4)[b]	1.34 .33	.62[b]
Schaal et al.	2009	Full PTSD	N = 26 NET n = 12 IPT n = 14	4 sessions; at least one session 120–150 min	CAPS	NET = 0% IPT = 0%	NET = 67.17 (20.10) IPT = 66.00 (14.10)	NET = 50.25 (19.20) IPT = 54.93 (15.60)	.86[a] .74[a]	.26[a]
Stenmark et al.	2013	Full PTSD	N = 81 NET n = 51 TAU n = 30	10 sessions of 90 min	CAPS	NET = 36 % TAU = 30 %	NET = 83.72 (15.51) TAU = 83.67 (16.52)	NET = 56.76 (25.87) TAU = 71.45 (24.77)	1.31[a] .59[a]	.57[a]
Zang et al.	2013	Full PTSD	N = 22 NET = 11 WL = 11	4 sessions of 60–90 min	IES-R (Intrusion)	NET = 0% WL = 0%	NET = 16.91 (6.88) WL = 17.36 (3.17)	NET = 8.73 (4.56) WL = 16.00 (4.29)	1.40 .36	1.58

NET narrative exposure therapy, *PED* psychoeducation, *CIDI* composite international diagnostic interview, *KIDNET* narrative exposure therapy for children, *MED-RELAX* meditation-relaxation, *UPID* UCLES PTSD index, *CAPS* clinician administered PTSD scale, *SC* supportive counseling, *SIT* stress inoculation training, *WL* waitlist, *PTGI* posttraumatic growth inventory, *TAU* treatment as usual, *TBE* treatment by experts for borderline personality disorder, *PDS* posttraumatic diagnostic scale, *TC* trauma counseling, *MG* no-treatment monitoring group, *IPT* interpersonal psychotherapy

[a] Effect size based on completer data because ITT was not reported

[b] Data from 6 months follow-up assessment