

## Changes in PTSD Patients' Narratives During Prolonged Exposure Therapy: A Replication and Extension

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Following E. B. Foa, C. Molnar, and L. Cashman (1995), narrative changes from the first to the last exposure session were compared for improved and nonimproved PTSD patients on fragmentation, organization, internal, and external events. Improved ( $n = 8$ ) and nonimproved ( $n = 12$ ) patients did not differ regarding changes in fragmentation or organized thoughts. However, improved patients showed a greater decrease in disorganized thoughts during treatment. Furthermore, all patients, independent of improvement, showed significant changes in the same direction; a decrease in disorganized thoughts and external events and an increase in internal events. Although previous results were partly replicated, it is concluded that narrative changes may be due to exposure treatment itself rather than to changes in memory representation.

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**KEY WORDS:** PTSD; exposure therapy; narratives; fragmentation; memory.

Several studies explored the relationship between trauma narratives during exposure therapy and PTSD symptom severity. Most research thus so far has focused on narrative content (e.g., Pennebaker, 1993). In contrast, Foa, Molnar, and Cashman (1995) explored the process of narrative organization during PTSD treatment. Assuming that traumatic memories differ from other types of memories, Foa and colleagues argued that trauma recovery requires a special type of mental processing.

Successful trauma therapy aims at increasing traumatic memory organization and should result in more coherent narratives. To test this, Foa et al. (1995) developed a coding system and examined the cohesiveness of patients' trauma narratives. They hypothesized that successful treatment results in a decrease in fragmentation and an increase in narrative organization. Although the

decrease in fragmentation did not reach a significant level, it was significantly related to successful treatment outcome. Moreover, compared to the first session, significantly more organized thoughts were found in the last session, supporting the idea that therapy enhances narrative organization. In addition, at the end of the treatment patients expressed significantly more internal events (e.g., feelings), and, though not significant, slightly fewer external events (e.g., details). This study aims at replicating and extending the findings of Foa and coworkers. Although this previous study is informative with respect to narrative organization processing, an important limitation is that all patients ( $n = 14$ ) highly improved during therapy. Therefore, it remains unclear whether changes in narratives were exclusively due to the reorganization of traumatic memory. To establish whether these changes reflect an underlying recovery process rather than an epiphenomenon of treatment, we compared trauma narratives in the first and last therapy sessions of improved and nonimproved PTSD patients. If changes in trauma narratives reflect adequate processing of a traumatic event, improved patients should show a larger decrease in fragmentation and a larger increase in narrative organization than nonimprovers. In addition, improvers should show a larger

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increase in internal events and a larger decrease in external events.

## Method

### Participants

Participants came from a university outpatient clinic and a specialized anxiety disorders outpatient clinic. All participants met *DSM-IV* (*Diagnostic and statistical manual of mental disorders*, 4th ed.; American Psychiatric Association, 1994) criteria for chronic PTSD established through structured clinical interviews by two independent assessors. In total, 20 participants (7 men) of whom audible tapes of both the first and the last exposure session were available were included in our study. Mean age was 38.4 years ( $SD = 11.2$ ). Trauma history was obtained using a standard protocol. Participants had experienced various traumatic events: witnessing or being involved in accidents ( $n = 6$ ), finding a dead person after suicide or homicide ( $n = 5$ ), sexual ( $n = 4$ ), and domestic ( $n = 5$ ) violence.

Improvers were defined as participants who showed at posttreatment: (a) at least a 50% decline in PTSD symptoms compared with pretreatment symptoms, and (b) scores below the posttreatment means for our sample on the Symptom Checklist-90—Depression ( $M = 36.8$ ) and STAI-State ( $M = 49.5$ ). Using this combined end-state functioning criterion (see also Jaycox, Foa, & Morral, 1998), 8 participants were classified as improved and 12 participants as nonimproved. Improved and nonimproved participants did not significantly differ on demographics and trauma characteristics at the start of the treatment.

### Treatment

Treatment consisted of nine weekly prolonged imaginal exposure sessions, based on the treatment programme described by Foa et al. (1991). Imaginal exposure was sustained for 60 min per session. Participants were instructed to close their eyes and to tell the story in the present tense while remembering the traumatic event as vividly as possible, including details, thoughts, and feelings. Each exposure session was tape-recorded and participants were asked to listen to the tape once a day at home. Additional homework involved in vivo exposure to feared situations.

Therapists in both groups were psychologists who had been extensively trained in the prolonged exposure therapy. Experienced cognitive-behavioral therapists supervised treatment weekly. The tapes of the treatment sessions were randomly selected to check for deviations

from the protocol during the supervision sessions. No large deviations from the protocol were detected.

### Treatment Outcome Instruments

The main outcome measure was the PTSD Symptom Scale—Self-Report (PSS-SR; Foa, Riggs, Dancu, & Rothbaum, 1993). The items (range 0–3) provide both diagnostic and severity data about each of the 17 *DSM-IV* criteria for PTSD. The Dutch translation of the PSS-SR showed high internal consistency (Cronbach's  $\alpha = .96$ ).

The Dutch version of the State Anxiety Inventory (STAI-State; Van der Ploeg, Defares, & Spielberger, 1980) was used as a general measure of anxiety. It includes 20 items, each ranging from 0–4, and had a Cronbach's  $\alpha = .93$ . The depression subscale of the Symptom Checklist-90—Revised (SCL-90-R; Dutch adaptation; Arrindell & Ettema, 1986) consists of 16 items, each ranging from 1–5. Cronbach's  $\alpha$  for the Dutch SCL—Total Depression subscale was .93.

All measurements were carried out before the start of the first exposure session (pretreatment), and 1 week after the last (9th) exposure session (posttreatment).

### Narrative Coding System

Narratives were coded according to a standardized coding manual (Foa et al., 1995). First, the narratives of the first and last exposure sessions were transcribed. Following Foa et al. (1995), participants' recollections of the threatening part of the actual trauma were selected. Next, narratives were chunked into separate utterance units. Subsequently, each unit was coded as an utterance category. Whenever an utterance fitted in more than one coding category, it was assigned to the category with the highest priority ranking. The priority order of the categories was (1) Repetition (an utterance repeated within five lines); (2) Thoughts: (a) Desperate thoughts (implying that nothing could be done), (b) Disorganized thoughts (implying confusion or disjointed thinking), (c) Organized thoughts (indications of realization, decision making, or planning), and (d) Unfinished thoughts; (3) Negative feelings (unpleasant emotions, including dissociation); (4) Sensations (e.g., olfactory, visual); (5) Actions (including actions of both the victim and the perpetrator); (6) Dialogues; (7) Speech fillers (e.g., "uh," "so"); and (8) Details.

Following Foa et al. (1995), for data-reduction purposes, categories were reorganized in several groups: (a) Fragmentation consisting of repetitions (1), unfinished thoughts (2d) and speech fillers (7); (b) Organization: as the organization of the traumatic memory is theorized

to play a crucial role in trauma recovery, the categories of (2c), that is, organized thoughts and (2b), that is, disorganized thoughts, were analyzed separately; (c) Internal events: thoughts (2a, 2b, 2c, and 2d), negative feelings (3), and sensations (4); (d) External events: actions (5), dialogues (6), and details (8).

### Interrater Agreement

First, raters were trained in applying the coding system using five parts of the transcription of a patient's first session. This patient was not included in the actual study. Two raters independently divided parts of the narrative into separate utterance units, interrater agreement was 94–100%. Next, these units were independently coded into categories. Interrater agreement of the first part was 73% and improved due to practice to 86% on the fifth part. As a further reliability check, a member of the Foa group that developed the coding system coded a translated part of our transcription. Interrater agreement for the division in units was 96%, for the category coding 93%. Having established satisfactory reliability, the 40 narratives were coded by one of the two Dutch raters. Parts of all narratives were coded by both raters independently. Interrater agreement was 91–94% for unit division, and 89–92% for category coding.

### Data Analysis

Because the length of the narratives varied significantly between and within participants, percentages of utterances in all narrative categories were computed for each patient and session separately. To replicate the Foa et al. (1995) study, pre- and posttreatment means in each category were subjected to paired *t* tests. In addition, to study differences between improvers and nonimprovers,

independent *t* tests (one-tailed) were performed on change scores (posttreatment minus pretreatment scores) in each of the narrative categories. We used a one-tailed criterion because of the strong directional hypotheses theoretically derived. In light of this theory, outcome in the wrong tail is meaningless and can be dismissed as a chance occurrence (Abelson, 1995).

### Results

The results are summarized in Table 1. Consistent with our classification, participants in the improved group showed a significant decrease in PTSD symptoms,  $t(7) = 7.41$ ,  $p < .001$ ; state anxiety,  $t(7) = 4.18$ ,  $p < .01$ ; and depression,  $t(7) = 2.48$ ,  $p < .05$ ; whereas nonimproved participants did not. With respect to PTSD symptoms, no significant pretreatment differences between groups were found.

All participants, irrespective of improvement, showed a significant decrease in disorganized thoughts,  $t(19) = 2.36$ ,  $p < .05$ , and external events,  $t(19) = 2.33$ ,  $p < .05$ ; and an increase in internal events,  $t(19) = -2.32$ ,  $p < .05$ , from pre- to posttreatment. No significant decrease in fragmentation was found. Independent *t* tests revealed no significant differences in changes from pre- to posttreatment ratings between improved and nonimproved participants in the narrative categories fragmentation, organization, external, and internal events. However, improved participants showed a greater decrease in disorganized thoughts during therapy than nonimproved participants,  $t(18) = -1.73$ ,  $p = .05$ .

### Discussion

Consistent with the findings of Foa et al. (1995), during treatment all patients showed a significant increase in

**Table 1.** Symptom Severity and Percentages of Utterances in First and Last Session Narratives for Improved and Nonimproved Patients

	Improved patients ( $n = 8$ )		Nonimproved patients ( $n = 12$ )	
	First session	Last session	First session	Last session
Symptom severity				
PTSD-symptoms	23.63 (8.65)	3.75*** (4.17)	30.08 (9.15)	26.92 (8.82)
STAI-State	50.13 (11.57)	30.63** (8.12)	59.92 (11.37)	62.08 (8.59)
SCL-Depression	32.00 (13.01)	23.63* (10.89)	46.25 (12.03)	45.58 (11.62)
Narrative coding system				
Fragmentation	42.20 (14.53)	46.05 (12.47)	46.69 (15.51)	44.48 (16.04)
Organized thoughts	20.70 (8.21)	22.71 (8.13)	17.03 (7.33)	21.40 (12.06)
Disorganized thoughts	2.49 (2.21)	0.57* (0.78)	2.47 (2.47)	2.02 (3.17)
Internal events	45.10 (8.03)	47.96 (9.02)	43.32 (6.14)	49.61 (10.88)
External events	31.02 (11.46)	25.69 (11.42)	29.52 (9.82)	25.06 (12.44)

Note. Values given in the parentheses indicate SD.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

internal events and a decrease in external events. However, improvers and nonimprovers did not differ regarding changes in internal and external events. In addition, although all patients showed a decrease in disorganized thoughts during treatment, this decrease was greater for improved patients than for nonimproved patients. This supports the earlier finding by Foa et al. (1995) that successful therapy and organization in trauma narratives are related. In addition, Harvey and Bryant (1999) observed that after a traumatic event participants with acute stress disorder (ASD) expressed more disorganized thoughts compared to participants without ASD. Also, the use of words implicating causal and insightful thinking is linked to health change (Pennebaker & Francis, 1996). All together, successful exposure therapy may help patients to distinguish threatening and nonthreatening information of the trauma and lead to better insight and fewer disorganized thoughts.

Although the above findings suggest that improvement is related to narrative organization, an alternative explanation is possible. All patients, irrespective of improvement, showed a decrease in disorganization and mentioned fewer external events and more internal events. In other words, rather than reflecting the beneficial treatment effect on elementary memory processes, narrative changes may be a more general side effect of the treatment itself. It cannot be ruled out that repeatedly telling the same story enhances narrative organization.

Some methodological aspects of the present study deserve consideration. First, the small sample size restricts the generalizability of the findings and increases the chance of Type II errors. To prevent these errors, one-tailed tests were used. Second, patients in our study had experienced various traumas, which might affect the distribution across narrative coding categories. To address this issue, analyses were only performed on category groups. Also, some small differences exist concerning the provided treatment and that provided by Foa et al. (1995). However, theoretically the hypothesized changes in narrative organization are assumed to be independent of both the trauma nature and the treatment programme.

Another consideration involves the narrative coding system itself that includes categories reflecting different kinds of psycholinguistic levels that are not mutually exclusive and may be present simultaneously in the same

sentence. Although the coding system was developed to study organizational and structural aspects of the narratives, also formal aspects (such as repetitions) and content of narratives (such as desperate thoughts, angry feelings) were included. To gain more insight into psycholinguistic aspects of memory processing during the trauma reliving, it would be recommended to study formal levels of narratives, as these levels may be less sensitive to artefacts caused by the treatment itself.

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