



## Review Article

# Post Traumatic Stress Disorder: An Alternative Paradigm

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**Abstract:** Trauma focussed treatments for PTSD, have limited efficacy and utility. The purpose of this paper is to review a) the theoretical base of TFT's, in particular the evidence that a flawed traumatic memory lies at the heart of the development of PTSD b) the evidence that a focus on the traumatic memory is a necessary part of the evidence based treatment of PTSD and c) to distil an alternative model of PTSD. The author reviews existing trauma focussed treatments to determine a) what may be the active ingredients for change and b) treatment acceptability. He suggests that it is not proven that the qualities of the traumatic memory are pivotal in the development and maintenance of PTSD. Psychogenic amnesia is not found to be significantly associated with outcome, compared to the bodily expressions of exaggerated startle response and hypervigilance. There appears no added value in re-living the traumatic event per se, rather the latter may prevent treatment compliance. The author suggests an alternative conceptualisation of PTSD, that does not appeal to a notion of arrested information processing but suggests instead that PTSD arises from a state of terrified surprise, (which is a combination of an exaggerated startle response and hypervigilance) which the person explains in terms of a hostile environment.

**Keywords:** Trauma-focussed Treatment, Arrested Information Processing, EMDR, Treatment Acceptability, Dropouts

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## 1. Introduction

It has been postulated [1] that traumatic memories are assigned to an *active memory storage* which repeats its own content until its processing has been completed. This theorising occurred just a few years before a diagnosis of PTSD entered the diagnostic nomenclature DSM-III [2] in the wake of the Vietnam war.

Trauma focussed treatments, including EMDR [3], cognitive processing therapy [4] and prolonged exposure [5] were developed with a theoretical rationale of arrested information processing in the genesis of PTSD. Trauma focussed treatments primarily target the Negative Alterations In Cognition in Mood Cluster and the Avoidance Cluster introduced in DSM-5 [6]. The former refers to the post-trauma development of a negative view of self, others or the world. The avoidance cluster consist of two symptoms avoiding thinking about or remembering distressing details or feelings related to the trauma (cognitive and emotional avoidance) and behavioural avoidance - avoiding people places, situations, activities or things that bring back distressing recollections of the event. Curiously psychogenic amnesia is

conceptualized in the DSM-5 [6] as a negative cognition and mood symptom rather than perhaps as an involuntary form of avoidance. Psychogenic amnesia (as opposed to neurogenic amnesia which is a product of head injury and unconsciousness) i.e the inability to remember an important part of the trauma might be thought of as a proxy for the incomplete processing of information referred to as the active ingredient in the development of PTSD by trauma focussed therapy theorists. The theoretical substrate to these approaches is that something has gone wrong in the encoding of the memory.

## 2. The Fragmentation Hypothesis

Proponents of trauma focussed therapy [7, 8], suggest that trauma narratives are characterised by sensory aspects, incoherence and a lack of sequence, collectively referred to as fragmentation. [9] summarises this view: “conscious or ‘verbally accessible’ memories of trauma will tend to be vague, poorly organised and to show gaps and discontinuities”. The rationale for Prolonged Exposure therapy given by [10] is that trauma narratives become more organised over the course of

treatment. Repeated prolonged exposure (PE) to the trauma narrative and other trauma related reminders is postulated to provide corrective information by allowing the patient to emotionally process the memory, alter the underlying fear structure and reduce PTSD. In support of this [5] compared rape memories before and after exposure therapy and found that a reduction in the fragmentation in the organisation of the narrative was positively related to a reduction in the level of trauma related anxiety. Thus the qualities of memories of the trauma are held to be pivotal in the development of PTSD.

But clients with PTSD have difficulties performing verbal memory tasks such as recalling a story [11] this deficit could explain apparent gaps in relating the trauma narrative. Interestingly these authors found that verbal memory significantly improved over the course of trauma-focused psychotherapy. This may parallel the evolution a more coherent narrative as trauma focussed therapy progresses. It is not clear whether fragmentation of the articulated narrative reflects fragmentation in the memory as opposed to practice in telling the memory. Additionally [12] commenting on the [5] study, note that it fails to take account of a possible link between reading level and memory organisation.

[13] have performed a more direct test of the fragmentation hypothesis, they examined the trauma narratives of 77 men and women with chronic PTSD in a comparison of the effects of PE and the antidepressant Sertraline. Utilizing self-report, rater coding and objective coding of narrative content fragmentation was compared by treatment modality and response. There were no differences in fragmentation from pre-to post treatment between PE and sertraline or treatment responders and nonresponders. The authors concluded 'fragmentation may not be a crucial mechanism for PTSD treatment, and other explanations of change, such as those emphasising meaning and new learning, should be emphasized'. Further the authors observe that trauma narratives are not recalled in a unique manner and that narrative recounting style may reflect a general tendency of how an individual integrates autobiographical information, potentially reflecting a general rather than specific vulnerability factor in PTSD.

Fragmentation is postulated to be a mediating factor between dissociation and the development of PTSD. The uncertain status of fragmentation casts doubt on the mechanism, if any, by which dissociation is an agent in the development of PTSD.

### 3. The Dissociative Encoding Hypothesis

Peritraumatic dissociation refers to dissociation at the time of the trauma such as experiencing the event as slowed down or from a spectator's point of view. It is hypothesised that this interferes with the elaboration of the traumatic memory. This may be compounded by dissociation that occurs post-trauma. The DSM-5 [6] operationalises dissociation in two ways derealisation (i.e perceiving one's world or environment as not real) and depersonalisation (i.e perceiving one's self as not whole, connected, or real). But dissociation (defined in terms of depersonalization and derealization) appears to be a minor player amongst PTSD symptoms with between 14% [14] and

25% [15] of civilian sufferers assigned to a dissociative class. In DSM-5 [6] the 'dissociative subtype' is viewed not as a subtype as such but as a particular comorbidity. This casts doubt about whether dissociation is a significant player amongst the majority of PTSD sufferers. It can be objected that the DSM-5 [6] is too restrictive in its definition of dissociation and that the latter term should also embrace psychogenic amnesia which is a DSM symptom of PTSD. But psychogenic amnesia is by no means a universal phenomenon amongst PTSD sufferers. A study by [16] of patients who had recovered from PTSD with cognitive processing therapy or prolonged exposure indicated that approximately 2/3rds had psychogenic amnesia initially and this reduced to just 40% at follow up. By contrast avoidance of thoughts had a prevalence of 90% initially reducing to 18.9% at follow up. Overall the findings suggest that dissociation, however conceptualised, is likely to be at most a minor player in the development and maintenance of PTSD. Further any such effects are unlikely to be exerted via fragmentation. To date, no study has specifically evaluated if the subtype, as defined in DSM-5, affects PTSD treatment response or the course of the disorder. However patients with PTSD are a heterogeneous group, and individuals can present with very different symptom profiles, and it is likely to be important to determine which profiles respond better to which treatment.

### 4. The Active Ingredients in TFT

Trauma focussed therapies target the alleged poor quality of the traumatic memory, but the studies on fragmentation and dissociation reviewed above cast doubt whether such 'poor quality' is a salient issue. From a client's perspective they rarely present complaining of gaps in their memory (psychogenic amnesia) or of dissociation. Nevertheless in randomised controlled trials, assessed using the PRISMA guidance [17], TFT's are effective with about 50% of PTSD sufferers in the sense that they lose their diagnostic status posttreatment [18]. [19] in a meta-analysis of psychotherapy studies for PTSD found a 56% recovery rate in patients in an intention to treat analysis but interestingly nearly 40% of supportive therapy comparison subjects who completed treatment no longer met criteria for PTSD. This suggests that there may be a number of active ingredients in efficacious psychotherapies for PTSD and possibly even within the same treatment protocol e.g providing support and cognitive restructuring. Traditionally the TFT therapist and the PTSD client are facing in opposite directions, with regards to avoidance the former is committed to facilitating a discussion/exposure to the trauma whilst the latter has devoted considerable energy to blocking the memory. There is an intrinsic hurdle for the therapeutic alliance to surmount in TFT. About 50% of PTSD clients suffer from depression. A study by [20] showed that rapport is the single biggest predictor of outcome in the treatment of depression. The development of rapport is likely to be particularly challenging for TFT therapists.

In the [8] model of PTSD, treatment targets not only the traumatic memory but also target negative appraisals after a

traumatic event and it may be that it is this latter factor that is pivotal in the gains made with this treatment. But negative appraisals after a traumatic event have also been invoked as a final common pathway using Prolonged Exposure, [21]. EMDR can be considered a form of exposure therapy and it seems likely disconfirmation of erroneous cognitions is an active ingredient for change in this protocol, albeit that such cognitions are not directly targeted in this or indeed in PE. It may be that developing a therapeutic alliance in which negative alterations in cognition and mood are targeted is necessary and sufficient for the efficacious treatment of PTSD. A study by [22] showed that cognitive processing therapy conducted without a written account of the trauma (non-trauma focused CPT) showed lower levels of symptom exacerbation (14.7%) during treatment than did both cognitive processing therapy with written trauma accounts (standard trauma focussed CPT) (28.6%) and prolonged exposure (20.0%). Further the dropout rate was lower in cognitive processing therapy minus the written account (22%) than it was for the traditional cognitive processing therapy (34%) [23]. Non trauma focussed CPT appears more acceptable to clients than standard CPT and as effective. [24] found that written accounts are important for the small minority of patients with high levels of dissociation i.e that the traditional cognitive processing protocol is appropriate for this subgroup. However these results have not been replicated using the DSM-5 criteria for dissociation. Nevertheless [24] hypothesised that 'It is possible that these clients needed to reconstruct a fragmented set of memories into a coherent narrative in order to benefit from cognitive interventions'. Despite this there is a suggestion that incomplete information processing may not be central to the development of PTSD albeit that it may play a part.

But a study by [25] suggests that dissociation may be an epiphenomenon of the perceived centrality of the event. These authors reviewed evidence that event centrality may play a prominent role in both the development and maintenance of symptoms of PTSD. The Centrality of Event Scale (CES) examines the extent to which a traumatic event is perceived as central to an individual's identity and life story, by asking questions such as 'This event has become a reference point for the way I understand myself and the world' and 'This event has permanently changed my life'. The weighted mean correlation between the full scale measures of PTSD and the CES was 0.51 and between the CES and dissociation of 0.25. These findings may be at variance with the view that faulty processing of the traumatic event at encoding due to peritraumatic dissociation cause the trauma to be poorly integrated into the autobiographical knowledgebase [8]. It can be objected that it is specific emotional reactions and sensory images that remain disintegrated rather than the more abstract aspects of the trauma tapped by the CES. However the CES correlated positively with the emotional intensity, physical reaction and sensory vividness of the specific target memory. These findings suggest that the CES is strongly related to the overall accessibility of the target memory, including the emotional and sensory components of the remembered event. Further the centrality of a specific, negative event is shaped,

not only by factors related to this event per se, but also by more general dispositions of the individual, a positive correlation has been found between Neuroticism and the CES.

The trauma may be a landmark memory rather than a splintered memory and this is compatible with an 'exaggerated sense of current threat' which is considered to be an indispensable characteristic of PTSD by [8]. To the extent that their treatment works it may not be because the patient is helped to process the traumatic memory but because patients are encouraged to collect experiential evidence that their sense of current threat is exaggerated.

Negative alterations in cognition and mood is a new symptom cluster in the most recent version of the DSM criteria [6]. TFT's target newly developed negative views of self, others and the world, but they do so by varying degrees of focus on the traumatic memory. In the latest iteration of cognitive processing therapy [24] the emphasis for most PTSD clients is on writing Impact Statements with regards to the trauma and the re-authoring of those statements without an explicit focus on the traumatic memory. This is more in keeping with the finding of [25] who reviewed evidence that event centrality may play a prominent role in both the development and maintenance of symptoms of PTSD.

## 5. The Replicability of Efficacious Treatment

The randomised controlled trials of trauma focused therapies for the treatment for PTSD have been conducted in research centres and whilst they are clearly efficacious there is a dearth of evidence as to whether they are translatable to routine practice. The few effectiveness studies that have been conducted either a) have serious methodological problems e.g in a study of the implementation of the [8] in Northern Ireland [26], patients were not assessed using a 'gold standard' diagnostic interview, or blindly nor was there a comparison condition b) were not independent of the researchers who had developed the protocols in the efficacy studies e.g [27] or c) were on an atypical population e.g veterans of the wars in Afghanistan and Iraq [28] in addition there was no 'gold standard' diagnostic interview at the end of treatment and no comparison condition. [29] has recommended that for a treatment to be given a 'very strong recommendation' there has to be at least one well-conducted study that has demonstrated effectiveness in non-research settings. There is uncertainty as to whether trauma focussed therapy has cleared this particular methodological bar. Further in the [19] meta analysis 30% of those screened for the efficacy trials were rejected. Thus it is not known whether the positive findings from efficacy studies will translate to routine practice. It is always possible that highly qualified, highly trained therapists from prestigious research centres can deliver treatments that are problematic for routine clinicians, this might be particularly the case for trauma focussed treatments.

TFTs are the [30] recommended treatments for PTSD, and major organisations such as the UK IAPT service are expected

to be NICE compliant. But a study by [31] of 90 IAPT clients found just a 15% recovery rate amongst those who had PTSD (n=36) assessed independently using a 'gold standard' diagnostic interview. In earlier work [32] had found only half (57%) of PTSD sufferers in routine practise compliant with listening to a trauma exposure tape, with a liberal interpretation of compliance listening to it just 3 times a week. PTSD models and treatments have not only to be valid but also capable of easy dissemination, to make a real world difference, it is not yet clear that this has been achieved.

## 6. Rapport and the Delivery of Trauma-Focussed Treatment (TFT)

Whilst trauma focused therapy is effective, with 50% of patients losing their diagnostic status, dropout rates are typically 30% [33]. A study by [22] showed that cognitive processing therapy conducted without a written account of the trauma showed lower levels of symptom exacerbation (14.7%) during treatment than did both cognitive processing therapy with written trauma accounts (28.6%) and prolonged exposure (20.0%). Further the dropout rate was lower in cognitive processing therapy minus the written account (22%) than it was for the traditional cognitive processing therapy (34%) [23]. A study by [34] found that 42% of clients undergoing cognitive processing therapy did not complete treatment, with most discontinuing between sessions two and five. The traditional CPT protocol is that at the end of sessions three and four clients are assigned to produce detailed written accounts of their trauma homework, a likely somewhat aversive procedure.

In routine practice only half of people comply with TFT homework. [32] asked 37 PTSD diagnosed clients, treated in routine practice, to make a comprehensive recording of their trauma in the treatment session, in the first person, present tense, and, for homework, to listen to the tape daily for as long as it took them to habituate. Even with compliance liberally interpreted as listening to the tape at least 3 times a week for 3 weeks, only 21 of the 37 (57%) complied. The developers of prolonged exposure [35] required their clients to listen to their trauma tape for 1 hr daily for homework, but compliance was not monitored. The likely poor compliance with the procedure in routine practice suggests that prolonged exposure may not be the active ingredient for change. TFTs are so aversive that [36] have suggested use of hydrocortisone to aid compliance and have provided some evidence of this 'beneficial' effect.

Whatever the TFT treatment, approx. 50% lose their PTSD diagnostic status [18] in randomised controlled trials (rct's). The limited efficacy of TFTs suggests a need to re-examine its theoretical base. Further the effectiveness of TFT in routine practice remains to be demonstrated, practitioners are unlikely to be like the highly trained and qualified clinicians employed in rct's, and ill-equipped to administer an inherently difficult treatment.

## 7. Terrified Surprise – A Biomarker for PTSD

Most extreme traumas such as a serious road traffic accident are novel causing the amygdala (the brains alarm) to fire rapidly. The amygdala is involved in the automatic blinking response if you move your finger quickly to your eye even without the intention of poking it, it is likely involved in the exaggerated startle response, which is one of the symptoms of PTSD. [37] has argued that this response together with another symptom hypervigilance involving repeated checking for danger, constitutes a state of 'terrified surprise' which may be a biomarker for PTSD. [38] found that the startle response was the biggest predictor of the development of PTSD symptoms than all other symptoms with an out-strength of 0.83 at the other extreme amnesia (gaps in the traumatic memory) had an out-strength of 0. When startled there is a reflex to seek the source of the disturbance and hypervigilance and startle have been found to be highly connected in a number of studies [39, 40]. But [38] findings are in need of replication in samples with a diagnosis of PTSD, their subjects were civilians undergoing rocket fire in Israel and the trajectory of symptoms was assessed using a psychometric test, the PTSD Checklist [41]. Meta-analyses of neurocognitive studies in PTSD have confirmed the presence of attentional bias to threat relevant information [42], an expression of hypervigilance. This is adaptive in dangerous situations but not in the daily environments encountered by most PTSD sufferers.

## 8. The Pivotal Role of Terrified Surprise

Terrified surprise is a composite of an exaggerated startle response and hypervigilance. These two symptoms are probably most rigorously defined in the CAPS interview for DSM-5 [41], which requires an assessment of the frequency and intensity of each symptom, to yield an overall severity score on a 5 point scale, (0 to 4), with a cut-off score of 2 or more to indicate the symptom can be regarded as present at a clinically significant level.

The normal response to extreme trauma is to experience intrusions in the form of flashbacks/nightmares but in most cases these are of limited duration. But this raises the question of what makes them persist in a small minority of cases? It is suggested that 'terrified surprise' (TS) and the associated coping responses/explanations are pivotal to the development of PTSD. It is the evolving exaggeration of everyday hassles that is used to justify their state of 'terrified surprise' e.g avoiding going anywhere unfamiliar, that is pivotal in the genesis of PTSD. In the absence of TS the person is more likely to develop a specific phobia and though there may be intrusions they are likely to be uncomfortable rather than very upsetting i.e below the threshold for significant functional impairment. Figure 1 depicts this model of PTSD

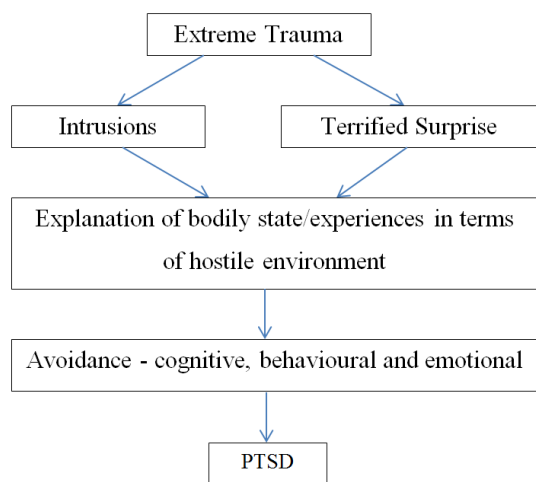


Figure 1. A Simple Model of Adult PTSD.

The type of post trauma explanations that lead to a persistence of PTSD, may be subsumed under the safety, power, esteem and trust issues focussed upon in cognitive processing therapy see [43] e.g 'there is danger everywhere'. 'I am a wimp the way I react now'.

In the [16] study of patients who had recovered from PTSD with cognitive processing therapy or prolonged exposure 80% of clients endorsed insomnia initially. This symptom may itself be a product of a state of terrified surprise. Sleep may be near impossible with a high perceived level of threat and scanning. In this study insomnia reduced to just over 40% at end of treatment and 30% at follow up. In the [16] study irritability and poor concentration were endorsed initially by almost 80% of PTSD sufferers but arguably these symptoms would likely be highly correlated with a state of terrified surprise. If a PTSD symptom has aetiological significance then it should have a high prevalence and be susceptible to greater change in the wake of an evidence based treatment, but psychogenic amnesia was present in only 2/3rds of subjects in the [16] study reducing to 40% at follow up. As such psychogenic amnesia is a less promising candidate than a state of terrified surprise.

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