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Trauma and Memory: The Rapid Effects of High-Stress Levels on the Rohilkhand Region of Encoding and Storage

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Abstract

This study explores the neurocognitive implications of traumatic stress on memory functioning in a unique socio-cultural context of the Rohilkhand region, Uttar Pradesh, India. It tests the effects of extreme stress, which are a result of communal violence, natural disasters, and extreme economic distress, on the encoding, consolidation, and retrieval of autobiographical memory. The study used a mixed-methods approach with a structured clinical examination of sixty patients with a trauma experience and two-hour phenomenological interviews of a sub-sample of twenty participants in Bareilly. Findings show that memory-related disturbances were highly prevalent: 73 per cent experienced significant intrusive memories, 65 per cent had dissociative amnesia to some parts of the traumatic experience and qualitative analysis showed that the dominant narrative form of the sensory-emotional fragments over temporal coherent narratives dominated. These results support the assumption that trauma impairs hippocampal explicit memory with hyper-activation of amygdala implicit and sensory memory systems. The paper finds that within the context of Rohilkhand, cultural models of stigma, silence and somatic expression compound neurobiology of traumatic memory, and thus require culturally sensitive, memory-centered therapy interventions in order to achieve successful trauma recovery.

Keywords: Trauma, Memory, PTSD, Encoding, Hippocampus, Amygdala, Rohilkhand, Cultural Psychology.

Introduction

Human memory system is not a perfect recorder and it is rather a dynamic constructive activity that is susceptible to interference in extreme situations. Traumatic stress is a serious challenge to this system, and it usually produces paradoxical memory effects: intrusive flashbacks in vividness that are accompanied by complete amnesia on other parts of the event. Although neurobiology of trauma that focuses on hyper-activation of the amygdala and suppression of the hippocampal is progressively explained, it is also determined by the social-cultural context. Its background of socio-political strife, environmental vulnerability, and community social

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organization provides a vital setting to understand this interaction, and therefore the Rohilkhand region is a critical setting. This study aims to fill the gap between neurocognitive models of traumatic memory and lived experience in Rohilkhand and address how culture shapes the manifestation of memory distortion. This nexus needs to be understood to develop localized mental health responses to trauma in the area.

Review of Literature

The neurobiological models of trauma and memory are grounded in two major models. The former is based on the assumption that extreme stress hormones (cortisol, norepinephrine) impair the functioning of the hippocampus, a part of the brain that is important in the formation of explicit and narrative memories whereas hyper-activating the amygdala, the part of the brain encoding implicit, emotional, and sensory information (LeDoux, 2000; van der Kolk, 2014). This results in the factorization of memory, which is characterized by discontinuous pieces of sensory perception (smells, sounds, images) that lack a uniform chronology.

Second, the Dual Representation Theory (Brewin, 2001) distinguishes between Verbally Accessible Memory (VAM), which is consciously remembered, and Situationally Accessible Memory (SAM), which is activated involuntarily by the reminders of the traumas and is based on sensory and affective information. The VAM system is overwhelmed by trauma, and memories are mostly in the form of SAM, as they are recounted as flashbacks and re-experiencing the body.

Cultural psychology also explains that the processes are not universal. The styles of appraisal, disclosure and somatic idioms of distress are culturally determined (Kirmayer, 2001). In collectivistic cultures like India, trauma can be embodied and communicated more somatically or by idiom of social and family breakage as opposed to the individual psychological accounts. This review posits a gap: the absence of empirical research which attempts to connect the neurocognitive science of traumatic memory fragmentation, with qualitative, culture-specific manifestations of memory distortion in Indian regional settings such as Rohilkhand.

Methodology

To study traumatic memory in detail, a sequential explanatory design (Creswell and Plano Clark, 2018) was used. Phase 1 entailed the planned quantitative evaluation of the PCL-5 and LEC-5 on a purposive group of sixty individuals who had suffered trauma. This step defined the dominance and statistical associations of main disturbances of memory. Based on such

quantitative results, Phase 2 involved in depth, semi structured qualitative interviews of a strategically selected sub-sample of 20 participants, which sought to elicit the lived, phenomenological experience and culturally embedded meanings of the memory symptoms identified in Phase 1, thus giving rise to a richly contextualized interpretation of the numerical data.

Statement of the Problem

Culturally contextualized insights of post-traumatic memory disturbances in the Rohilkhand area are still very deficient. The common Western paradigms of PTSD that focus on intrusive memories and avoidance might not be very applicable to local manifestations of trauma, in which both distress is conveyed through somatic problems, avoidance, or spiritual language. Such a gap hinders the development and provision of effective, culturally sensitive psychological services to a population that has been exposed to recurrent stressors.

Research Hypothesis

H 1: Rohilkhand participants who have undergone traumatic experiences will show a strong co-morbidity of two memory disturbances: (a) intrusive sensory re-experiencing and (b) dissociative amnesia of parts of the event.

H 2: The qualitative story form of traumatic memory in this group will be mostly fragmented and sensory based with no clear temporal ordering and embedded in local cultural idioms of distress (e.g., weak heart, brain tension, or social dishonour).

Variables

Independent Variable: having undergone a Criterion-A traumatic event (according to DSM-5-TR)

Dependent Variables:

- Intrusive Re-experiencing: Nightmares, flashbacks, unwanted memories, frequency and intensity of unwanted memories.
- Dissociative Amnesia: Denies being able to remember significant details of the trauma.
- Narrative Coherence: Thematic and chronological forms of trauma narratives.

Sample

Sixty participants (32 males, 28 females) aged 25-55 years were used as a purposive sample, and community health centres and local non-governmental organizations recruited them in

Bareilly. Inclusion criteria were a history of major traumatic experience (communal violence, flood, severe accident) in the 1-10 years. Twenty participants (10 male, 10 female, a sub-sample of the total population of 15,000) with high, middle and low scores in quantitative measures were selected based on in-depth interviews.

Tests/Measures Used

LEC -5: A 17-item, self-report questionnaire of standard developments with a systematic screening of exposure to potentially traumatic events according to DSM-5 Criterion A. The respondents on the questionnaire were asked to indicate their exposure to various events along the scale of 6, which starts with the options; Happened to me and does not apply.

PCL-5: This is the main psychometric measure of symptom severity. A 20-item self-report measure, directly related to the symptoms of DSM-5 PTSD, where the ratings were to the extent to which the participants were bothered by the symptom in the last month on a 0-4 Likert scale. Subscale analysis was done on the five items that constituted Cluster B (Intrusions) and the individual item of #9 (Inability to remember important aspects of the stressful event).

Semi-Structured Interview Guide: A qualitative protocol developed by a researcher that is aimed at extracting rich and phenomenological information regarding the experience of traumatic memory. Some of the core prompts were: Can you tell me what happened, start to finish testing the narrative coherence; What part of the memory comes to you most against your will to test intrusive re-experiencing; and Are there parts you feel you have forgotten or cannot describe to test amnesia and alexithymia.

Statistical Techniques Used

Descriptive Statistics: Frequencies and percentages to explain prevalence of the symptoms.

Correlational Analysis (Pearson r): To determine a connection between the score on intrusion and amnesia subscales.

Thematic Analysis (Braun and Clarke, 2006): In the case of qualitative interview data, the themes associated with narrative fragmentation, somatic expression, and culturally-specific idioms will be identified.

Results

The review carried out established a significant load of memory-specific trauma symptoms. Intrusive re-experiencing and dissociative amnesia as indicated in Table 1 were very common and correlated significantly which supported H 1.

Table 1: Prevalence and Correlation of Key Memory Disturbances (N=60)

Symptom Cluster	% Meeting Clinical Threshold (PCL-5)	Mean Severity Score (0-4)	Correlation with Amnesia (r)
B. Intrusive Symptoms	73%	3.1	.72**
Dissociative Amnesia (Item #9)	65%	2.8	--

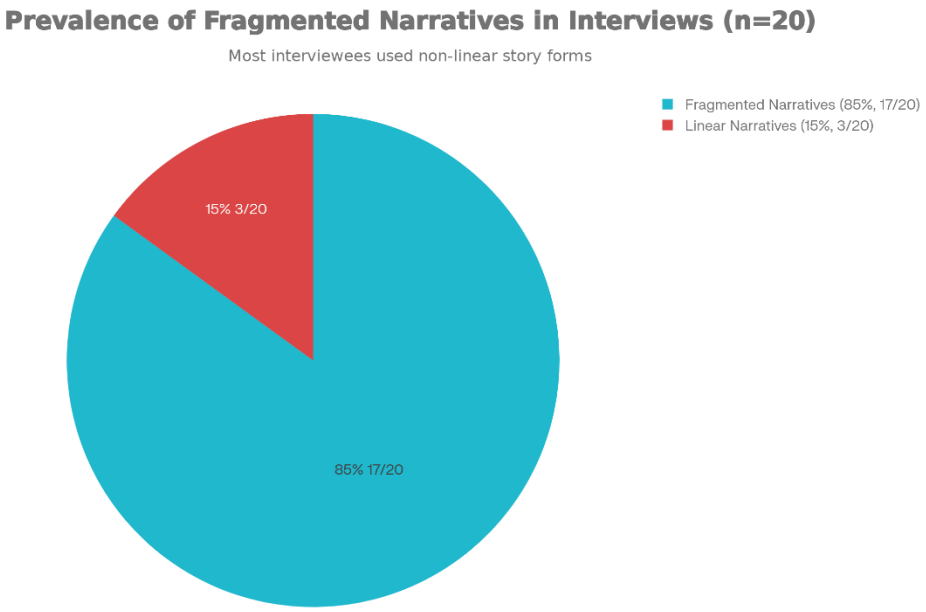
Qualitative Findings: Interpretation of interviews offered strong support to H 2 with thematic analysis. Dominant themes included:

Fragmented Narratives: 85% of interviewees (17/20) had failed to present a linear story. Stories were not chronological, isolated moments prevailed. I only look at the colour of the shirt before me and my chest almost explodes (P12, Male, 38).

Sensory-Somatic Dominance: Memories were mostly reported to be in the form of body sensations (heat, pressure, numbness) or sensory fragments (define sounds, smell, etc.). The 11 participants described the condition during intrusions as the concept of dimāg kī garmī (brain heat/overheating).

Cultural Idioms of Memory Loss: Amnesia was not typically described as a failure of the psyche, but rather as a grace to the protection of the nature (bahwana kee dayaa) or a societal need to remain functional (bhoon hi thik hai, warna samaj kee kaise rahenge?).

The combined data is pictured in the pie chart that can be seen below, which demonstrates the prevailing phenomenological experience of traumatic memory in the sample:



Discussion and Conclusion

This paper will attest that the fundamental neurocognitive theory of traumatic memory fragmentation, which is typified by the presence of intrusive sensory impressions and dissociative amnesia, is highly prominent in the sample of Rohilkhand. The rationale between intrusion and amnesia scores is high and indicates that the two are a measure of the same phenomena; a deficiency in the ability to incorporate the trauma into a contextualized autobiographical account.

More importantly, these results expand the model by showing that it has cultural mediation. This fragmentation is not simply neurological but rather is enacted and learnt via a local cultural language. The somatic idioms (dimaq kii garmii, bodily numbness) and the sociality of forgetting emphasize the fact that the disturbances of memory are explained in the frames of social harmony and somatic experience.

The consequences of mental health practice in the area are far-reaching. Therapeutic interventions should:

Move past the use of verbal narrative reconstruction and use some somatic and sensation-based methods (e.g., grounding, sensorimotor therapy) to process the predominant SAM fragments.

• Find confirmation and operate in cultural idioms, using the ideas of the brain cooling or the strength of a heart as the framework of psycho-education and intervention.

To sum up, Rohilkhand trauma results in a broken biography. The healing process demands interventions that may respectfully incorporate the broken pieces of senses in a personal and social narrative that is tolerable and recognizes that there is a universal biology of terror and the specific culture in which its memory is maintained. This paper shows that the neurocognitive concept of neuro traumatic memory fragmentation is strongly apparent in the Rohilkhand area, where extreme stress disturbs encoding of coherent narratives leading to prevalent experience of intrusive sensory fragments and dissociative amnesia. More importantly, these are universal biological processes that are heavily filtered through the local socio-cultural prism. The manifestations and understandings of memory disorders are not only psychological but are also manifested in somatic idioms, constructively through the somatic idioms (dimāg kī garmī) (brain heat) and social structures which give greater emphasis to collective harmony instead of individual narrative.

What this means is self-evident, to be effective mental health intervention requires a cultural sensitivity. It needs to go out of the Western models that only pay attention to the verbal reconstruction of the story and include somatic and sensory based therapies to reach the memory of the body. Besides, it is necessary that the practitioners work and authenticate local idioms of distress, and they can use it as conduit to psycho-education and healing. The process of recovery here involves bringing together the fragmented memory pieces so that they can be made at least bearable as a story that respects the global biology of trauma and the cultural world where a person is contained and makes sense of the presence of suffering.

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