A Basis for Narrative Reframing Agents

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Abstract

While now used in the screening and management of a
wide range of mental health conditions, conversational
user interfaces (CUIs) have yet to become
commonplace in trauma recovery contexts. However,
they may be ideally suited to facilitate narrative
reframing tasks: trauma-focused therapeutic
interventions in which individuals recall, reflect upon,
and reconstruct traumatic events in order to reduce
their recurring adverse effects (e.g., intrusive
thoughts). To improve the utility of CUIs for individuals
recovering from traumatic lived experiences, this paper
introduces the novel concept of Narrative Reframing
Agents, CUIs that are specialized to facilitate narrative
reframing tasks.

Author Keywords

Conversational user interfaces; narrative conversational
agents; narrative therapies; trauma-informed care

CSS Concepts

•**Human-centered computing** → **Human computer
interaction (HCI)**; HCI theory, concepts and models
•**Human-centered computing** → **Accessibility**;
Accessibility design and evaluation methods

Introduction

Narrative mental constructs play a key role in both the
acquisition and treatment of trauma [12]. As such,
trauma-informed therapies have been developed that

center around the narration [29] and subsequent "processing" [40] of traumatic memories. One core feature of this processing is narrative reframing [42], through which individuals challenge dominant and harmful portrayals of these experiences and, in many cases, intentionally modify them [22,42]. But while such approaches have proven effective [3,18,31], the involvement of human facilitators (e.g., therapists) carries with it inherent risks and limitations for individuals with a history of trauma. Triggers for trauma may arise suddenly, at times or in places where human professionals are not available. The independent perceptions and value positions of therapists can also strip storytellers of agency or even invalidate their lived experiences [35]. Likewise, the intrusive nature of human listeners' response styles can reduce the accuracy and integrity of episodic recollections [37].

To address some of the limitations of human clinicians, conversational user interfaces (CUIs) have been developed in mental health contexts to perform automated diagnosis [19,25], counseling [2,11], and stress reduction tasks [33]. But while many of these CUIs are capable of generic forms of cognitive reframing [5]–a precursor to narrative reframing–few have been developed to perform "trauma work" [10] or related narrative interviewing tasks [47]. Inspired by the novel popularity of viral CUIs for self-therapy [8] and the recent development of a CUI [24] capable of inner child work–a type of narrative reframing in which patients "speak" to their inner childs in order to heal unresolved traumas [7]–this paper introduces the novel concept and describes the basic functions of specialized narrative reframing agents (NRAs).

What are Narrative Reframing Agents?

As imagined here, NRAs are trauma-informed conversational agents designed to help users gain greater control over their own adverse and recurrent narrative constructs, based on the premise that "all too often, the stories we believe about ourselves have been written by others'' [11]. While NRAs may take many forms, their central aim should be to assist users in the sensitive process of recalling adverse experiences, reconstructing them verbally, and manipulating and interacting with them to achieve novel insights [38] and states of reflective catharsis [6,45]. To accomplish this, NRAs must be capable of narrative interviewing [49], modeling [28], and co-construction tasks [50], as well as augmenting their models on the basis of new information presented by users [15]. NRAs may benefit from a triangulated system architecture accounting for a primary narrative engine (to collect and manage narrative data), a visualization module (to visualize narrative data for users), and an interaction module, comprising the primary expressive agent [12]. Since NRAs are designed in part to "draw out" narrative-form user disclosures, they should possess discursive skills comparable to those of an experienced human interviewer [30,36,49], such that they can retain user attention and engagement as well as engender trust and effectively navigate conversational shifts. Consequently, NRAs should be capable of interacting with users in nonlinear ways that replicate natural human discourse [17]. NRAs should be capable of identifying when users may be avoiding disclosure as a result of known psycho-behavioral barriers, such as feelings of shame, which are common for trauma patients [48]. To better identify these cases, NRAs may independently measure a narrative's coherence [1] to identify potential gaps within a larger episodic matrix. Importantly, however, NRAs should be capable of

knowing which hidden information to surface and which to isolate until users are better positioned to address them [35]. To ensure applicability of their prompts and recommendations, NRAs should develop trauma-informed user profiles [13] that cater to users' unique experiences, understanding that people recovering from trauma encounter a wide range of challenges including emotional dysregulation and numbing [27]; lowered self-esteem [10]; poorer physical health [39]; cognitive distortions [12]; and feelings of social isolation [40], among other issues [21].

Affordances

NRAs may possess several unique affordances that make them ideally suited to address ongoing treatment gaps. They may be used effectively to elicit information [46,51] and may gather higher quality information than agentless data collection approaches (e.g., surveys; [26]), perhaps especially through the use of active listening skills [4], which may cause NRAs to appear more socially attractive [49]. NRAs may also perform both user interviews and interventions [41,43], allowing them to respond immediately to emergent needs with responsive and appropriate dialectical interactions (e.g., questions). They may also be designed to embody therapeutic agents who are culturally sensitive and responsive to a wide range of user identities [9]. NRAs may be developed to perform story construction tasks [15] and may be helpful for users who have a need for story completion–such as those with a history of trauma, whose memories of traumatic events are subject to impaired recollection processes [27]. Consequently, similar implementations have proven effective at identifying user emotional states [14,19,34]; reducing trauma-induced stress [32,33]; and aiding those who feel stigmatized by

healthcare settings, including those recovering from traumatic experiences, in disclosing their experiences and actively seeking treatment [37].

Ethical Challenges

Ageism [44], gender inclusivity, stereotyping, and discrimination [23] are all outstanding challenges of advanced CUI applications. In designing NRAs for the present population, developers should consider testing methods of "debiasing" their agents [16] as well as identifying when users are expressing hate speech or other harmful language in their own statements [21]. As Reeves [39] points out, people with traumatic life experiences may also become retraumatized as a result of healthcare experiences, including those designed to address their traumas directly.

Conclusion

There is significant potential for the development of NRAs in virtual trauma management. However, there remain few examples of functioning and effective NRAs, and while this paper highlights the utility of such agents, there are many considerations still to be discussed. Narrative reframing tasks are complex, involving rounds of narrative interviewing, modeling, and manipulation tasks. They also require sensitive agents who can ethically support the disclosure of individuals experiencing difficult emotional traumas while engaging them through dynamic, human-like conversations to establish trust. Ultimately, recent developments in viral chat agents [20] may open the door for more effective NRAs that are capable of both advanced narrative modeling and realistic dialogue tasks, allowing for improved CUIs to support this underserved user population.

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