
Post Traumatic Stress Disorder: Issues and Opportunities

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Abstract

Post-traumatic stress disorder (PTSD) affects 30% of United States war veterans. In this paper, we review some of the challenges therapists face when treating PTSD patients and discuss challenges and opportunities for technology to make an impact.

Keywords

Post-traumatic stress disorder, exposure therapy, narrative

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction

Post-traumatic stress disorder (PTSD) describes a condition occurring as a result of exposure to a traumatic event (e.g. witnessing a fatal car accident). While anyone can develop PTSD, it is a condition typically associated with war veterans. In fact, 30% of war veterans develop PTSD [2]. Given this statistic, we have initiated a project to explore the impact technology can have in PTSD treatment. In this paper, we discuss our investigation of technologies used to support treatment of PTSD. Based on this investigation and conversations with domain experts, we suggest

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opportunities designing interactive systems, which can address challenges to treatment.

Background on PTSD

PTSD is diagnosed according to the DSM-IV-TR as a mental disorder occurring when:

- a person witnesses or experiences events that involve death or serious injury, and
- the person's response is one of intense fear, helplessness or horror.

Symptoms include intrusive recollection of the event (e.g., nightmares), avoiding activities, people and situations that recall memories of the event and hyper-arousal (e.g., insomnia).

A number of treatments have been developed to address PTSD. In our work we focus on cognitive behavior therapies. In particular we are interested in exposure therapy and cognitive restructuring. We chose these therapies because they are considered to be some of the most effective forms of treatment [1].

Exposure therapy involves exposing patients to the memories of the traumatic situation to help them overcome their responses to reliving the event. Cognitive restructuring or Cognitive Processing Therapy (CPT) focuses on challenging unreasonable beliefs patients develop about the world. For example, someone who experiences a life-threatening car accident may begin to believe anytime they leave the house they will experience a life-threatening car accident.

Both exposure therapy and CPT involve a writing component. In the former case, it is used to revisit the traumatic experience, whereas in the latter it is used to help the patient re-write his or her beliefs about the world.

PTSD Treatment Issues

While cognitive behavior therapies have been shown to be effective treatments, lack of patient compliance reduces the efficaciousness of the treatment [6]. Patients either choose not to seek treatment or do not consistently attend treatment sessions. Reasons for this include the difficulty of revisiting traumatic memories and the stigma associated with seeking treatment for a mental disorder (especially among war veterans).

In a discussion with a domain expert from the Seattle Veterans Affairs (VA) Hospital, we learned palatability and barriers to remembering are also issues that make administering treatment difficult. Despite the effectiveness of exposure therapy and CPT, they both rely on asking the patient to revisit the traumatic situation. The expert discussed a desire to make the therapy more palatable for the patient.

The expert also indicated that helping people make adjustments in the way they remember the event can be beneficial. In particular, he cited members of the United States Armed Forces tend to block out the negative memories associated with a traumatic event, which has the effect of blocking out positive memories as well. He expressed a desire for a means to support better remembering.

Researchers have developed technologies to address some of these issues, but we believe there is great potential for technology to have further impact in this space.

Technologies Supporting PTSD Treatment

While there have been some efforts to use technology as part of treatment delivery for PTSD, these efforts have been largely confined to Computer-Based Therapy and Virtual Reality.

Computer-Based Therapy

Computer-based therapies typically involve either a therapist delivering the treatment protocol remotely (e.g., using video conferencing) or converting the protocol into a digital form that can be accessed (without significant involvement of a therapist) through a CD-ROM on a local PC or over the Internet. For example, Lange et al. developed and studied a website in which patients received treatment (e.g., writing about the traumatic event) and interacted with the therapist [3]. Similarly, Litz et al. developed a website for self-managed PTSD treatment [4].

Virtual Reality

The second major type of technology developed for PTSD treatment has been in virtual reality. VR experiences resembling the environment in which the trauma occurred are created for patients to experience. The VR serves as a form of exposure through which the patient must endure. Rizzo et al. developed a VR simulation to support exposure therapy and initially showed improvement in the patients receiving treatment through the system.

Opportunities for Interaction Design

While computer- and VR-based therapies have made some initial strides toward improving PTSD treatment delivery, Tarrier et al. found these technologies were least preferred among patients [6]. We believe there are many other technologies that could be leveraged to address the issues of compliance, palatability, anonymity and remembering.

Mobile and Ubiquitous Computing

In the mobile and ubiquitous computing domain we posit the use of capture-and-access as well as context-aware devices can deliver treatment in novel ways. For example, the use of life-logging technologies like the SenseCam might capture aspects of the event, which could be used to evoke memories during therapy sessions.

In addition a just in time (JIT) type of therapy could be provided at the point when symptoms occur. For example, if a door slamming triggers recollection of the traumatic event, ubiquitous devices (e.g., a mobile phone) might be used to document the incident and deliver treatment. A more proactive approach might use devices with GPS capability to deliver treatment when the patient is in proximity to triggers of symptoms. In either case, the treatment could be delivered when symptoms are occurring rather than induce the symptoms in therapy sessions via recollection. This approach might address our expert's concern for palatability by providing treatment when symptoms naturally occur.

Storytelling Support

Both exposure therapy and CPT involve some level of narrative composition concerning the traumatic event.

Pennebaker found people who write about emotional trauma show signs of rehabilitation more quickly than those who do not [5]. We believe the use of storytelling technologies can provide yet another means of delivering treatment. Whether providing patients with a structured journaling experience or a social network of veterans to develop and share stories with, we believe exploring more explicit support for telling one's story can make a significant impact. The former could serve as a means to provide self-managed care that allows anonymity. The latter could address challenges with compliance and remembering by adding social support.

Conclusion

We have provided an overview of the challenges associated with treating PTSD and highlighted some opportunities for improving delivery of care using technology. In particular, we underscored the potential of mobile and ubiquitous computing researchers and storytelling and narrative technology researchers to bring their expertise to this problem. In the future we plan to continue conduct formative design work with domain experts, therapists, and patients at the Seattle VA to learn more about what technologies would be of benefit. Given the number of veterans alone this condition affects, we expect this work to not only yield

innovative approaches to treatment, but also make a significant societal impact.

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