

Treatment-Related Change in Trust in Post-Traumatic Stress Disorder (PTSD)

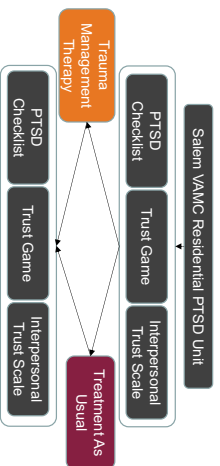
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Introduction

- **Social reintegration** can be a significant difficulty for Veterans with Post-Traumatic Stress Disorder (PTSD), and associated symptoms of anger and aggression can be a barrier to treatment.
- **Prediction error-like signals** encoded in the striatum have been linked to social learning.¹
- Acute stress impairs reinforcement learning.² Additionally, chronic³ and early-life stressors⁴ appear to impact prediction error-like signaling in the striatum.
- Prior research has used the **Multi-Round Trust (MRT) task** to elucidate patterns of learning to trust, cooperation, reciprocity, and betrayal in multiple rounds of a social economic game.^{1,5}
- **Our study aims** to investigate the impact of PTSD symptoms and treatment-related changes in symptoms on cooperation within an iterated social exchange.

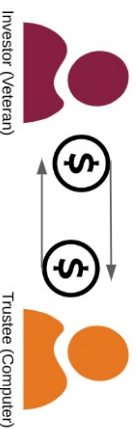
Methods

Study Design: Participants were assessed using the PTSD Checklist for DSM-5 (PCL-5) and the Structured Clinical Interview for DSM-5 (SCID-5). Participants then performed 10 rounds of the Multi-Round Trust task Next, participants underwent 6 weeks of residential treatment for PTSD at Salem VAMC. After completing treatment, subjects performed the Multi-Round Trust task again, as well as the PCL-5.



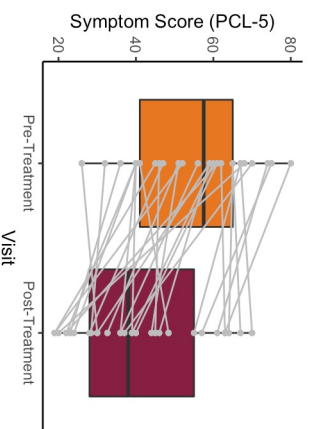
Participants: Recent Veterans receiving residential treatment at Salem VAMC for PTSD were recruited for the study. Of 75 possible participants, 56 agreed to participate in the study, and 30 completed treatment as well as pre- and post-treatment measures; an additional participant did not complete treatment but completed pre- and post-measures. Of these participants, 10 endorsed their index trauma as military sexual trauma, 12 endorsed combat-related trauma, and 8 endorsed trauma from another source.

The Multi-Round Trust (MRT) Task: In the MRT, the participant plays the role of the investor, and is given \$20. They can invest any amount of this \$20 in the trustee. The amount that the trustee received is tripled by the experimenter, and the trustee can then return any part of the tripled investment to the investor. Both the investor and the trustee are aware of the rules of the game. Each participant performs 10 rounds of the MRT before and after treatment.

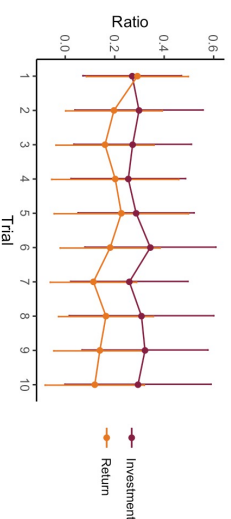


Results

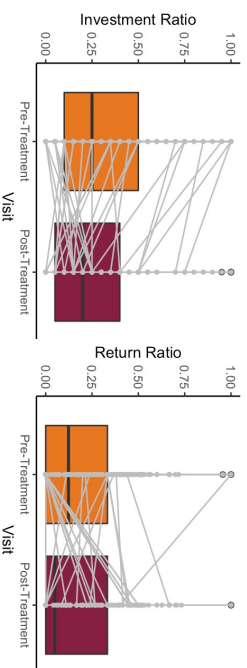
After treatment, PTSD symptoms endorsed decreased:



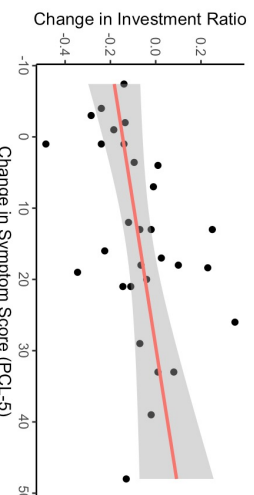
Investment and return ratios over ten rounds



Average investment decreased, whereas average return increased



Decrease in PTSD symptoms predicted increase in investment



Summary

- Preliminary analysis of this dataset shows varied response to treatment, with the majority of subjects responding to treatment by decreasing endorsed PTSD symptoms on the PCL-5.
- Veterans whose PTSD symptoms decreased more after treatment for PTSD increased their investments after treatment.
- Veterans whose PTSD symptoms had minimal change or increased after treatment decreased their investments.
- Ongoing analyses focus on investigating the fMRI imaging data that was acquired before and following treatment, while performing the MRT task.
- Based on a prior cross-sectional data set, we expect diminished pre-treatment prediction error-like signals in caudate nucleus in Veterans with higher levels of PTSD symptoms to improve with efficacious treatment.

References and Acknowledgements

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