

# Ascertaining the Longitudinal Impact of Social Buffering on Post-Trauma Recovery



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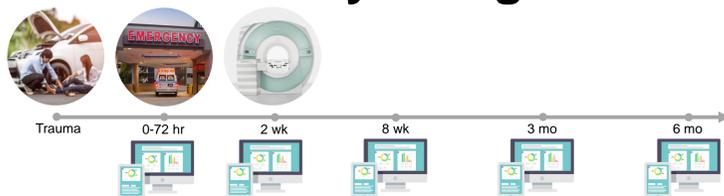
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## Background

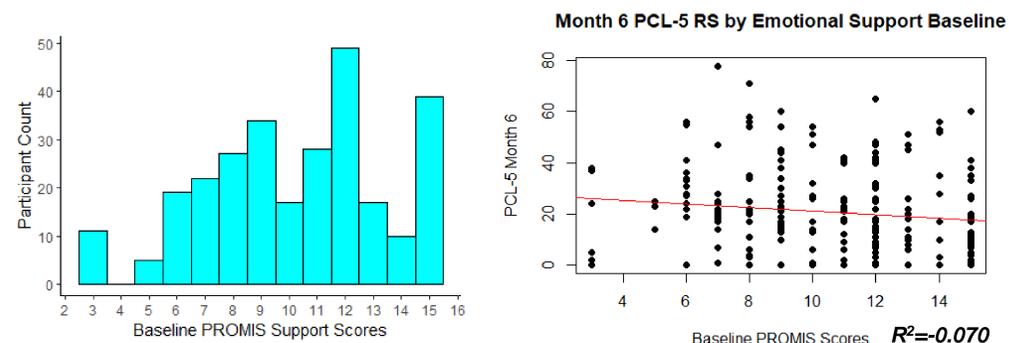
- Post-traumatic stress disorder (PTSD) is characterized by negative cognitive and behavioral changes associated with the avoidance of non-threatening stimuli.
- **Social buffering** (the presence of an affiliative relationship to a subject in study) is highly impactful in reducing stress responses to aversive stimuli. <sup>1</sup>
- We are interested in identifying the impact of social buffering on patients' processing of traumatic events on a longitudinal scale.
- We hypothesize that early post-trauma emotional support can prevent, or lower PTSD symptoms mediated by enhanced structural connectivity in emotion-regulation circuits, and a decrease in the reactivity of threat-related brain regions in response to social threat cues.
- Furthermore, previous work has suggested that increased amygdala reactivity and decreased medial prefrontal cortex responsiveness are associated with PTSD severity. Thus, we would expect opposite trends with both regions in the setting of emotional support/social buffering

## Study Design

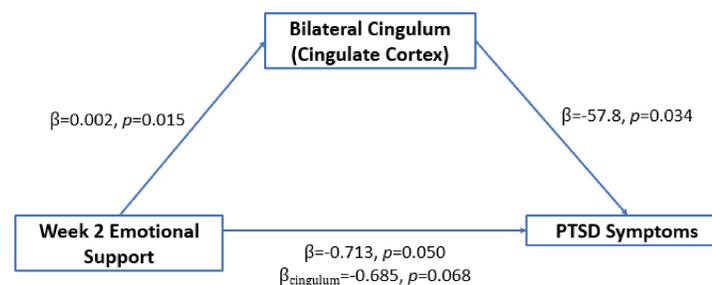


- Our patient data utilized information collected through the multi-institutional AURORA study. <sup>2</sup>
- Across 22 separate ED sites, data were available for n=315 individuals who experienced a trauma and were screened for PTSD (PCL-5) and perceived emotional support (PROMIS).
- Diffusion weighted imaging was collected 2 weeks post trauma.
- Participants were further evaluated in person at 6 months with 'fearful faces' task based functional MRI

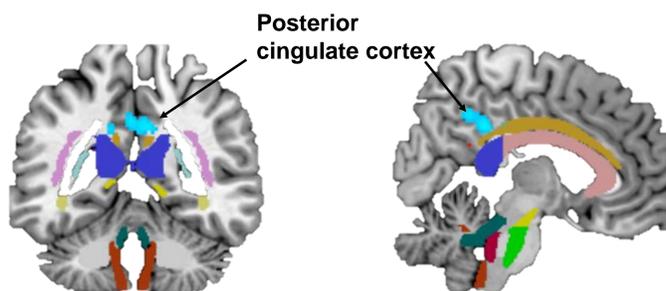
## Results



**Links between early (2 Weeks Post-trauma) emotional support and later PTSD symptoms** Our results indicate that early emotional support predicts lower PTSD symptom scores at subsequent follow-ups (8 week, 3 month, and 6 month)



**White matter integrity (2 Weeks Post-trauma)** Statistical analyses show a relationship between 2 week emotional support and cingulum, and uncinate fasciculus brain regions. Further modeling demonstrates significant role of cingulum in partial mediation of PTSD symptoms



**Whole-brain fMRI results** Early emotional support associated with lower engagement of a key default mode hub, the posterior cingulate (light blue; x,y,z = (96,86,102)) for Fearful > Neutral faces. This finding is plotted to show its close spatial alignment with the cingulum bundle (light brown)

## Discussion

- These values strongly suggest a protective relationship between social buffering and PTSD symptoms
- Furthermore, we are beginning to be able to localize regions implicated in PTSD that are responsive to social stimuli <sup>3,4</sup>
- These white matter tracts connect regulatory prefrontal regions with medial temporal structure
- We did not find social-support related effects on the threat network. Instead we found that alterations in the structure and function of the default mode network (DMN) mediated PTSD symptom severity. The DMN supports social processing, autobiographical memory, and representations of self and other.

## Future Directions

- The utilization of a high quality, multi-faceted support network is imperative in improving longitudinal outcomes as well as developing stress resilience
- Elucidating a network of structures responsive to social buffering can assist in monitoring PTSD recovery
- Our current measure of social buffering (PROMIS scores) represents one means of quantifying emotional support. Identifying other facets of support can enhance our understanding of social buffering on a larger scale.
- We also aim to incorporate other markers of social buffering that may provide insight in motivations to seek more robust support networks.

## References

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