ISTSS International Society for Traumatic Stress Studies

41st Annual Meeting

Predicting PTSD Treatment Response in Cognitive Processing Therapy Using Computerized Patient Behavior Analysis of Baseline Trauma Interviews

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University of CINCINNATI

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Continuing Medical Education Financial Disclosure

In the past 24 months, I, Joel Sprunger, have not had financial relationships with any ineligible companies.

Question

What can computers tell us about a patient's symptom severity and likely response to treatment based on how they talk about their trauma?

Method

Sample = 60 treatment-seeking PTSD patients starting CPT

Procedure

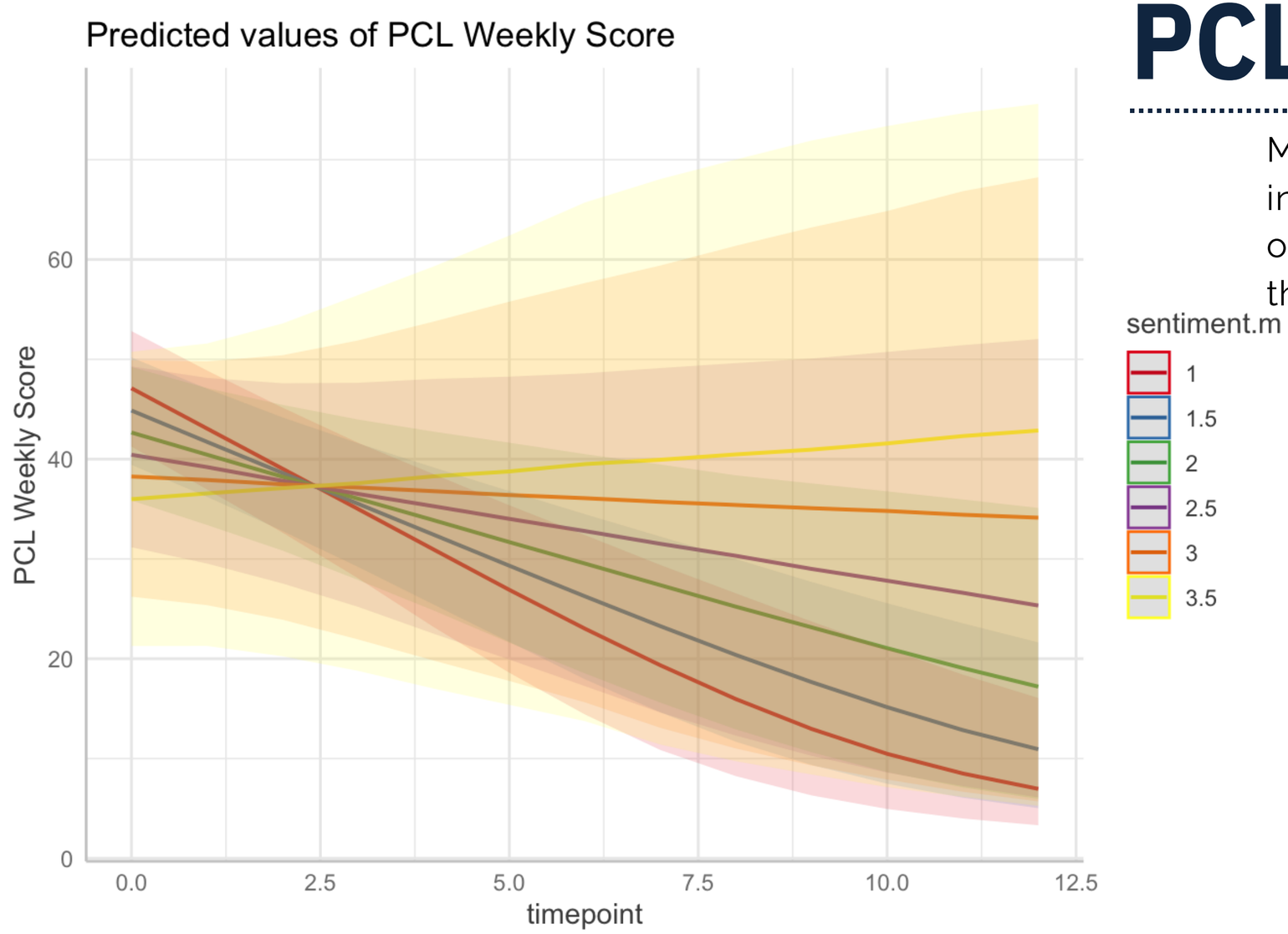
- Recorded participant voice and video during Zoom call while participants recounted their worst trauma (narrative) and its impact on their lives (impact statement)

Behavioral features:

- Cepstral peak prominence (CPP; acoustic feature)
- AI-derived sentiment (linguistic feature)

Captured PTSD (PCL-5) and depression (PHQ-9) symptoms from baseline through treatment

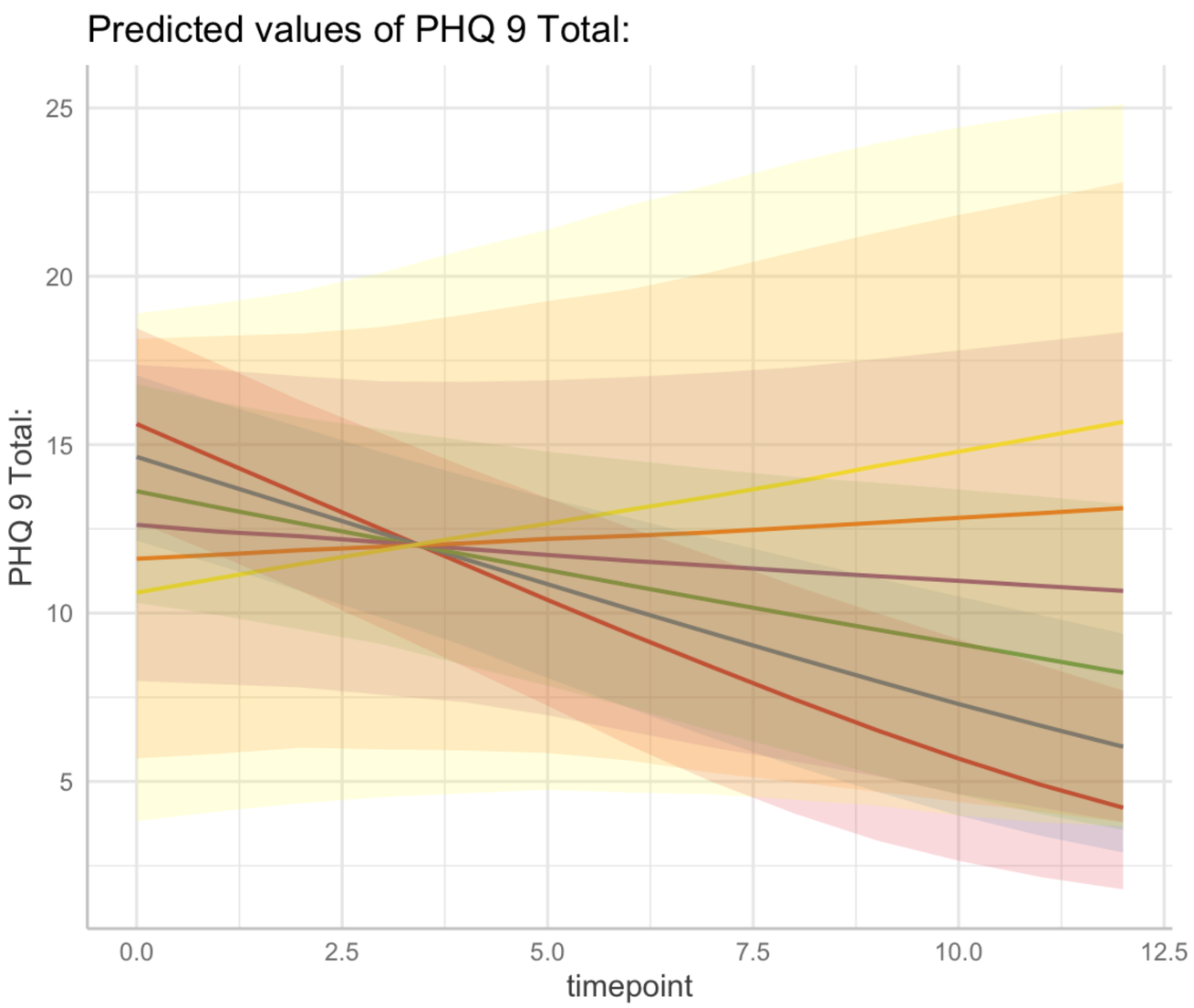
PCL-5 Weekly Scores



Mixed effects growth model predicting patients' intercepts (starting levels) and slopes (change over time) in PCL-5 Weekly scores during PTSD therapy

- The average person decreased in PCL score severity over time
- Patients with more negative sentiment start with higher PCL scores (-4.52, pd = 91.1%)
- Patients with more negative sentiment improve more in PCL score severity over time (1.85, pd = 97.9%)
- Patients who **speak negatively** about their traumas **with a clearer voice** improve the most (-0.71, pd = 95.4%)

PHQ-9 Weekly Scores



Mixed effects growth model predicting patients' intercepts (starting levels) and slopes (change over time) in PHQ-9 Weekly scores during PTSD therapy

- Patients with more negative sentiment improved more in PHQ scores over time (0.58, pd = 99.1%)
- No simple slope for sentiment
- No timepoint slope

Discussion

- Patients speaking more negatively about trauma's impact have higher initial trauma severity and show greater improvements in CPT
  - Patients who speak with greater vocal clarity in this way tend to show the greatest improvements

Strengths and promise

- Passively captured audio from standard trauma/therapy interview questions can be quantified by computers to yield predictive information about response to evidence-based psychotherapy
- CMBA might allow new expressive behavioral dimensions for improved treatment matching/planning and improve dropout

Limitations

- Although we are developing these methods quickly, they are not yet completely automated
- Need further research with larger samples to investigate the full utility of this technology, from facilitating early detection of traumatic stress disorders, quantifying behavioral prognostic indicators, and indicating multimodal treatment response over time

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THANK YOU

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