

theory of mind and emotion induction. The depression network included nodes in the left inferior and superior frontal gyri. The functional paradigms associated with this depression network were semantic monitoring/discrimination, reading, word generation, phonological discrimination, naming, and *n*-back.

**Conclusions:** Contrary to expectations, the cerebellum structural covariance networks were distinct with no overlapping nodes between PTSD and depression. The PTSD network represents volume reductions in regions associated with social cognition, whereas the depression network represents volume reductions in regions associated with language, memory, and speech. These findings reveal unique alterations in structural networks in PTSD and depression and demonstrate the need for further studies of cerebellum's role in the pathophysiology of these disorders.

**Keywords:** PTSD, Depression, Cerebellum, Meta-Analysis

**Disclosure:** Nothing to disclose.

### **P98. Linguistic Markers of Chronic PTSD in World Trade Center Rescue and Recovery Workers: A Computer-Based Natural Language Processing Study**

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**Background:** An emerging literature suggests the value of automated natural speech analysis in characterizing posttraumatic stress disorder (PTSD). Automated analyses of speech transcripts aim to identify linguistic patterns differentiating individuals with PTSD from trauma-exposed individuals who did not develop the disorder, with the ultimate goal of improving diagnostic characterization and treatment interventions for this chronic and disabling disorder. Studies to date have generally included heterogeneous samples of individuals with PTSD stemming from a range of trauma exposures and with varying degrees of chronicity. In the present study, we applied automated language processing methods to participant responses during open-ended interviews with World Trade Center (WTC) rescue and recovery workers, who were asked to describe their experience during the 9/11 terrorist attacks and their aftermath. Novel aspects of this study include a unique sample of WTC responders all exposed to a single, shared, and well-documented trauma, and the inclusion of a comparison group of highly resilient WTC responders.

**Methods:** WTC responders recruited from the WTC Health Program Responder Cohort (group-matched by age, race, marital status, education, and word count) completed in-person diagnostic interviews, including the Structured Clinical Interview for DSM-5 (SCID-5) and the Clinician-Administered PTSD Scale for DSM-5 (CAPS-5), administered by trained clinicians. Participants were also recorded during open-ended interviews while responding to the following prompt: "Please describe your experience of the 9/11 attacks and your experience during your involvement in the Work Trade Center recovery work". Interviews were designed to be non-directive; interviewers could further prompt participants by stating, "Is there anything more you'd like to say about your WTC recovery experiences?". Participants ( $n = 10$  per group) were classified into "highly resilient" [high WTC-related exposure severity, no lifetime psychiatric disorders, mean (SD) past-month CAPS-5 = 1.4 (1.2) and "chronic PTSD" [met past-month DSM-5 criteria for WTC-related PTSD; mean (SD) past-month CAPS-5 = 30.7 (10.7)]. Analyses of interview transcripts were conducted using Language Inquiry and Word Count (LIWC) software. Bivariate analyses were conducted to identify linguistic categories that

differed between groups at the  $p < 0.20$  level. These categories were then entered into a multivariate analysis of variance to identify between-group differences in linguistic categories used in interview responses. We then conducted LASSO regression analyses to examine associations between individual PTSD symptoms and linguistic categories. Analyses were adjusted for full-scale IQ and responder type (police vs. non-traditional [e.g., construction worker]).

**Results:** Bivariate analyses revealed 19 linguistic categories that differed between groups. In a multivariate model, 3 categories reflecting biological processes (i.e., body words [e.g., cheek, hands, spit], Cohen  $d = 2.0$ ); perceptual processes (i.e., feel words [e.g., feels, touch],  $d = 1.7$ ); and drives (i.e., affiliation words [e.g., ally, friend, social],  $d = 1.3$ ) showed large magnitude between-group differences, with WTC responders with PTSD using a greater proportion of feel and body words, and a lower proportion of affiliation words than highly resilient responders. Sleep disturbance was associated with a greater proportion of body ( $\beta = 0.67$ ) words; intrusive thoughts about the WTC disaster with a greater proportion of feel ( $\beta = 0.61$ ) words; and feeling distant or cut off from others with a lower proportion of affiliation words ( $\beta = -0.53$ ).

**Conclusions:** This study identified potential linguistic markers of chronic PTSD in a sample of individuals exposed to a common traumatic event. Findings point to specific differences in speech patterns in responders with WTC-related chronic PTSD, compared to highly resilient WTC responders. Further, preliminary evidence indicates a close alignment between certain linguistic markers and specific PTSD symptom dimensions, suggesting that linguistic markers might map to specific underlying biological abnormalities. Further study in larger samples, in combination with biomarker studies (e.g., neural circuitry function), has the potential to deepen our understanding of this heterogeneous disorder and enhance personalized treatment interventions for individuals with chronic PTSD.

**Keywords:** PTSD, Automated Natural Speech Analysis, World Trade Center Responders, Linguistic Markers, Resilience

**Disclosure:** Nothing to disclose.

### **P99. Longitudinal Effects of COVID-19 Related Occupational Stressors on Health Care Workers and First Responders: Implications for Wellbeing, Workplace Retention, Suicidality, and the Relationship of Acute Stress Symptoms to PTSD**

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**Background:** Elevated rates of psychiatric symptoms in health care workers working during the Covid-19 pandemic have been identified in multiple contexts. Less is known regarding the specific Covid-19 related occupational stressors associated with these psychiatric symptoms, and their impact on workplace functional impairment, professional retention, and suicidality.

Here, we report results from an ongoing longitudinal study of health care workers (HCW) and first responders (FR) working in the United States during the COVID-19 pandemic.

**Methods:** Participants were recruited via targeted outreach and paid advertising on social media, and assessments were completed using online surveys. Participants were assessed at baseline, then every 2-12 weeks for up to 9 months.

Exposure to COVID-19 related occupational stressors was assessed using a 13-point assessment scale assessing the frequency of potential COVID-19 related stressors, such as caring for patients severely ill with COVID-19, not having sufficient PPE, or experiencing an increased risk of infection with COVID-19 for one's