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Poster Abstracts

POSTER SESSION I

Research Method: Affective Neuroscience

Amygdala Activation to Emotional Stimuli is Related to Perceived Stress and Difficulty Regulating Emotions in the Context of COVID-19 Pandemic

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Background: Teens and young adults with pre-existing mental health issues are struggling to manage their emotional responses to the novel stressors presented by the COVID-19 pandemic. We examined biological predictors of ineffective emotion regulation in the context of the pandemic to identify who is at highest risk for poorer outcomes.

Methods: Our sample included 46 female participants (median age = 16.11 years) enrolled in a longitudinal study of self-injury in which they completed diagnostic interviews and an fMRI face-emotion processing task. After the onset of the COVID-19 quarantine, participants and their parents completed self-report questionnaires: Perceived Stress Scale (PSS), Difficulties in Emotion Regulation Scale (DERS), Epidemic-Pandemic Impacts Inventory (EPII), and Home Adjustment to Covid Scale (HACS). The activation to emotional stimuli in the fMRI task was compared to self-report responses of perceived stress and emotion regulation.

Results: Activation in the right amygdala prior to the pandemic was positively associated with emotion regulation difficulties (DERS; $r = 0.38$, $p = 0.0312$) and marginally associated with subjective reports of stress (PSS; $r = 0.34$, $p = 0.0715$). There was no significant relationship between either the DERS or the PSS and the EPII and HACS.

Conclusions: Global events can provide a natural experiment to examine stress system functioning. Activation patterns in key limbic regions may provide a critical biosignature of stress reactivity. We demonstrate that increased activity in the right amygdala in response to emotional stimuli before the pandemic was related to teen girls' perception of stress and difficulties in regulating emotions during the COVID-19 pandemic.

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Keywords: Adolescent Stress, Emotion Regulation, Perceived Stress, COVID-19, Brain Imaging, fMRI

Anhedonia is Associated With Attenuated Reward-Related Neural Activity During Cue-Evaluation and Motor-Preparation

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Background: Functional resonance magnetic imaging (fMRI) research indicates anhedonia is associated with blunted neural activity during reward-anticipation. However, due to low temporal resolution of fMRI, the time course of these associations remains largely unknown. We leveraged the strong temporal resolution of event-related potentials (ERPs) to examine associations between anhedonia and electrocortical activity across three temporally distinct stages of reward-anticipation: cue-evaluation, motor-preparation, and feedback-anticipation.

Methods: 72 participants completed the Positive Valence Systems Scale and an Electrophysiological Monetary Incentive Delay task. On each trial, cues indicated the condition (reward vs. neutral) followed by a target stimulus requiring a quick response. After a brief delay, feedback was presented. Reward cues indicated feedback will deliver monetary gains (+\$1.50) or no-gains (\$0.00) while neutral cues resulted in performance-only feedback unassociated with monetary gains or losses. ERPs after cues and before responses and feedback were measured as the difference between reward and neutral conditions at parietal electrode sites (Pz/POz).

Results: Results revealed increased anhedonia was associated with decreased Cue-P3s and Late-Positive Potentials from 350-1000 ms following cues ($r = -.25$, $p = .03$) and attenuated Contingent-Negative Variations 1000 ms before responses ($r = .34$, $p < .01$), but was unrelated to the Stimulus-Preceding Negativity before feedback ($p > .1$).

Conclusions: These results demonstrate associations between anhedonia and reward-anticipation are specific to decreased motivational salience following reward-relevant stimuli and inefficient motor-preparation during reward pursuit. Findings contribute to growing evidence that associations between anhedonia and reward processing extend beyond blunted hedonic pleasure to reduced motivational- and motor-related neural systems during reward-anticipation.

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Keywords: Reward Anticipation, Anhedonia, Motor Preparation, Cue Reactivity, Event-Related Potential (ERP)

Are There Sex Differences in Fear Conditioning and Extinction Before Puberty? A Preliminary Study in Pre-Adolescent Children

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Background: Prior studies in adults and adolescents have revealed sex differences in fear extinction, with females frequently showing poorer extinction as compared to males. This disparity may help to explain the greater reported