depressive symptoms (PDS) and posttraumatic stress symptoms (PTSS) in AAs experiencing MVC.
Methods: AA individuals presenting to the Emergency Department (ED) within 24 hours of MVC were enrolled. Six-week follow-up surveys included an evaluation of PDS (CES-D) and PTSS (IES-R). Multivariate regression analyses adjusting for study site and participant age were used to assess the influence of sex on PDS and PTSS. In secondary analyses, ensemble learning (Random Forest) methods were used to identify the most influential predictors of these outcomes in women and men.
Results: Participants (n=927, 62% female) presenting to the ED for care following MVC were enrolled. Six-week follow-up survey data was obtained in 85%. AA women had higher PDS scores ($F=4.733$, $p=0.030$) and higher PTSS scores ($F=4.216$, $p=0.040$) six weeks after MVC than men. Secondary analyses identified substantial sex differences in predictive factors. For example, among AA women the most strongly associated individual factors included both peritraumatic psychological factors (e.g., dissociation, loss of control) and pain severity, whereas in men such factors included only psychological characteristics (e.g. distress, catastrophizing).
Conclusions: Among AAs experiencing MVC, DPS and PTSS are more prevalent in women than men. Epidemiologic risk factors also differ in women and men, suggesting potential differences in underlying pathogenic mechanisms.
Supported By: Funding for this study was provided by NIAMS R01AR060852
Keywords: Posttraumatic Stress Disorder, Sex differences, Depressive Symptoms, Motor Vehicle Collision, African American

F81. Atypical Functional Connectome Hierarchy in Autism

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Background: Autism spectrum disorder (ASD) is a lifelong neurodevelopmental condition, with impairments in sensory processing and social cognition. Such deficits both in low- and high-level functions suggest an association to atypical functional hierarchy. Here we assessed this hypothesis using connectome-wide diffusion embedding, a non-linear technique to synoptically map a functional connectivity gradient from sensory to default mode regions.
Methods: The discovery dataset was based on resting-state fMRI data in 103 males with ASD and 108 typical males. Using diffusion embedding, we mapped the principal gradient of spatial variations in whole-brain connectivity. Surface-based models compared gradient magnitude between ASD and controls, controlling for site/age effects. Findings were complemented by systematic analyses of rich-club organization and long/short range connectivity profiling. To assess robustness, we repeated the analyses in an independent dataset (60 ASD, 59 controls).
Results: Compared to controls, ASD revealed decreased gradients in core DMN hubs, including medial prefrontal and parietal regions. Conversely, we observed increased gradients in unimodal association areas. DMN gradient reductions were associated with perturbed rich club connectivity across both short- and long-ranges, while unimodal cortices show connectivity alterations at mid-range, primarily to sensory-motor regions. Gradient findings were replicated in the separate dataset.
Conclusions: As hypothesized, both low- and high-level components along the functional hierarchy were affected in ASD, showing diverging patterns in connectome- and physical-space anomalies. Although the behavioral relevance of these network reconfigurations remains to be determined, they may differentially relate to anomalies in sensory integration and social cognition, commonly seen at the phenotypic level.
Supported By: Canadian League Against Epilepsy, CIHR Foundation/SickKids
Keywords: Autism Spectrum Disorder, Cortical Hierarchy, Resting State Functional Connectivity, Connectome Gradient

F82. Latent Factors of Psychopathology and Functional Connectivity of the Dorsal Anterior Cingulate Cortex During Reward Anticipation

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Background: Psychiatric disorders can be organized into the higher order latent factors of internalizing and externalizing as well as a general bifactor to account for overlap across disorders. The dorsal anterior cingulate cortex (dACC) has been identified as a possible neural substrate of this general bifactor. The current study examined the relationship between latent factors of psychopathology and functional connectivity (FC) of the dACC during reward anticipation.
Methods: 339 subjects (172 women, 26.09 ± 1.81 y.o.) from the Tennessee Twin Study (TTS) completed a structured clinical interview and the Monetary Incentive Delay Task. Beta series were extracted from the left dACC and the bilateral caudate during the anticipation phase of reward trials ($1 and $5). Correlations were run between pairs of regions for each reward type and then averaged to produce a single measure of FC. Multiple regressions were run with FC as the independent variable and latent factors as dependent variables. These regressions took stratification and clustering within twin pairs into account and covaried for relevant demographic variables.
Results: FC was not a significant predictor of the externalizing or general factors ($ps > .10$). FC was a significant predictor of internalizing ($\beta = .88$, $p < .05$).

Conclusions: Findings suggest that increased dACC FC during reward anticipation may be linked more specifically to internalizing psychopathology rather than shared across all disorders.
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Keywords: Reward, Functional Brain Connectivity, Internalizing Symptoms

F83. Activity in Multiple Stress Systems Distinguishes Depressed Patients' and Suicide Attempters' Response to Social Stress

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Background: Dysregulation of the stress response may involve both the HPA axis as well as the sympathetic adrenomedullary system (SAM). The Trier Social Stress Test (TSST) paradigm produces transient increases in stress and accompanying changes to both cortisol and alpha-amylase (a proxy for noradrenergic activity) that can be measured via saliva.
Methods: A modified TSST was administered to 107 unmedicated patients with current major depressive episode (26 with prior suicide attempt, 81 without) and 76 healthy volunteers. Salivary cortisol, alpha-amylase and heart rate were assessed pre-stress and at five timepoints afterwards. Heart rate, mood and subjective ratings were also collected.
Results: The TSST produced expected increases in all groups in subjective distress, heart rate, cortisol and alpha-amylase. All depressed patients exhibited a reduced ratio of total output of alpha-amylase to cortisol (ratio of AUCs with respect to ground: $F[2,147]=3.31$, $p=.039$). Suicide attempters, in turn, exhibited a higher and later peak cortisol (time by group effect: $F[8,696]=1.95$, $p=.05$), as well as reduced alpha-amylase output at non-stress time points (time by group effect: $F[4,572]=2.57$, $p=.037$).
Conclusions: Social stress was associated with relatively reduced alpha-amylase and elevated cortisol output in all depressed patients. Suicide attempters, in turn, exhibited an altered time course of response, with later peak cortisol and a return to lower levels of alpha-amylase output after stress. Data suggest a combination of dysfunctions in the HPA and SAM stress systems is associated with both depression and risk for suicidal behavior.
Supported By: NIMH
Keywords: Suicide, Trier Social Stress Test, Depression

F84. Towards a Neural Profile of Disruptive Mood Dysregulation Disorder: An EEG Study of Emotional Face Processing

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Background: DMDD is a childhood disorder characterized by emotional and behavioral dysregulation involving negative mood and temper outbursts. The pathophysiological correlates of this symptom presentation remain poorly understood. Using emotional faces, we aimed to identify a neurophysiological profile associated with internalizing and externalizing symptoms characteristic of DMDD.
Methods: Thirty-four children (age: M=10.05) were diagnosed through KSADS. Parents completed the Child Behavior Checklist for symptoms. Youths participated in an EEG while completing an implicit emotional face task. Data were captured from central and right-hemisphere electrodes: Pz (central-parietal; 300-400ms), P8 (occipito-temporal: 250-350ms) and O2 (occipital: 200-300ms).
Results: In response to fear faces, the P300 latency to peak was associated with more withdrawal ($R2= .17$, $p=.03$), rule-breaking ($R2= .18$, $p=.03$), and aggression ($R2= .18$, $p=.03$). Withdrawal, rule-breaking ($R2= .28$, $p=<.01$), and conduct ($R2= .20$, $p=.02$) were also related to greater P8 response. However, O8 activity predicted less withdrawal and affective problems ($R2 =.20$ and .21 respectively; $ps<.04$).

In response to calm faces, greater latency to peak predicted withdrawal. P8 activity to calm faces predicted depression ($R2= .15$, $p=.05$), withdrawal ($R2= .28$, $p=.<.01$), rule-breaking ($R2= .38$, $p=<.01$) and conduct problems ($R2= .32$, $p=<.01$). Finally, greater peak amplitude at the O2 electrode predicted less depression and withdrawal ($R2 =.22$ and .21 respectively; $ps<.02$).
Conclusions: Greater responsivity to calm and fear in occipital regions predicted fewer internalizing symptoms. Greater externalizing symptoms were found in those with more responsivity and less efficient processing of fear in occipital-temporal and midline areas. Neural response to emotional faces may predict symptom presentations in DMDD.
Supported By: (RO1) MH 93582
Keywords: Mood Disorders, EEG, Neurophysiology

F85. An Electrophysiological Biomarker That Predicts Treatment Response to ECT

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Background: Electroconvulsive therapy (ECT) is the most effective treatment for major depression (MDD), but also carries risk of cognitive side-effects. The ability to predict whether treatment will be effective prior to initiation of treatment could significantly improve quality of care, reduce suffering, and diminish costs. In this study, we sought to carry out a comprehensive and definitive study of the relationship between the background electroencephalography (EEG) and therapeutic response to ECT.
Methods: Twenty-one channel resting EEG was collected pre-ECT and 2-3 days following ECT course from two separate data sets, one to develop an EEG model of therapeutic response (N=30) and a second to test this model (N=40). A 3-way principal components analysis was applied and