during working memory. For aNC, correlation patterns were higher than yNC (FDR<0.05). HR mirrored aNC patterns.
Conclusions: Multisession fMRI leveraging task-based and resting-state shows early increases in connectivity of HR relative to age-matched controls, suggesting that deviation of connectivity trajectories is associated with risk for psychosis.
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Keywords: High-risk for Psychosis, Prefrontal Functional Connectivity, Multimodal Imaging, Neurodevelopmental Trajectories, Cognitive Functioning

Alterations in Resting-State Functional Activity and Connectivity for Major Depressive Disorder Eating Phenotypes

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Background: Major depressive disorder (MDD) is accompanied by changes in appetite and food intake. Identifying neural alterations associated with hyperphagic and hypophagic MDD can yield insight into the mechanisms by which depressed mood impacts appetite and weight changes. Task-based functional magnetic resonance imaging (fMRI) findings suggest these MDD eating phenotypes are associated with altered reward (e.g., nucleus accumbens, orbitofrontal cortex (OFC)) and interoceptive (e.g., anterior insula) processing.
Methods: We used resting state fMRI data to compare fractional amplitude of low-frequency fluctuations (fALFF) and seed-based connectivity (SBC) among hyperphagic (n = 77), hypophagic (n = 66), and euphagic (n = 42) MDD groups and a healthy control group (n = 38). We examined fALFF and SBC in a mask restricted to reward and interoceptive regions and also performed exploratory whole-brain analyses. SBC analyses treated the nucleus accumbens, and regions demonstrating group differences in fALFF (i.e., right lateral OFC and right anterior insula), as seeds. All analyses used Free Threshold Cluster Enhancement.
Results: Mask-restricted analyses revealed stronger fALFF in the right lateral OFC, and weaker fALFF in the right anterior insula, for hyperphagic MDD versus healthy controls. We also found weaker SBC between the right lateral OFC and left anterior insula for hyperphagic MDD versus healthy controls. Whole-brain analyses revealed stronger SBC between the lateral OFC and bilateral precentral gyrus for hyperphagic MDD versus healthy controls.
Conclusions: Our results suggest that hyperphagic MDD may be associated with altered activity in and connectivity between interoceptive and reward regions.
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Keywords: Major Depressive Disorder, Resting State fMRI, Eating Behavior

Altered Functional Brain Dynamics in Chromosome 22q11.2 Deletion Syndrome During Facial Affect Processing

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Background: Chromosome 22q11.2 deletion syndrome (22q11.2DS) is a multisystem disorder associated with multiple congenital anomalies, variable medical features, and neurodevelopmental differences resulting in diverse psychiatric phenotypes, including psychosis, facial memory and social cognitive deficits. Neuroimaging in individuals with 22q11.2DS has revealed differences in BOLD fMRI activation relative to matched controls in BOLD fMRI activation during facial affect processing tasks, but time-varying functional interactions between brain areas have not yet been compared in this context.
Methods: In a sample of 58 individuals with 22q11.2DS and 58 HCs matched for age, race, and sex, we applied constrained principal component analysis to identify overlapping spatiotemporal brain activation patterns evoked by task stimuli from BOLD fMRI data acquired during an emotion identification task. We used multilevel growth models to compare task-evoked component time courses between individuals with 22q11.2DS and matched healthy controls (HCs).
Results: We found the largest group differences in 2 components. The first component consisted of delayed, anti-correlated frontal-motor activity, occurring during incorrect responses, which was diminished in the 22q11.2DS group (β = -0.031, p = 6.3 × 10−7). The second component involved delayed coactivation of amygdala, hippocampus, and ventromedial prefrontal cortex, occurring during all responses, with an earlier peak in the 22q11.2DS group ($\beta = -5.5\times10-4$, p = $5.4\times10-4$).
Conclusions: Our findings suggest that individuals with 22q11.2DS show differences in time-varying functional interactions evoked by emotion identification. This finding may implicate dysfunction of frontal-motor feedback and emotional memory circuits in the pathophysiology of social cognitive deficits in this cohort.
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Keywords: BOLD fMRI, 22q11 Deletion Syndrome, Emotional Facial Processing, fMRI-CPCA, Brain Networks