In This Issue

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A brief summary of the articles appearing in this issue of *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*.

Neural Activity in Depression: Effects of Ketamine, Sex, and Inflammation

Ketamine has rapid antidepressant effects. This study by **Reed *et al.*** (pages 610–618) examined ketamine's effects on brain function during emotional processing using functional magnetic resonance imaging (fMRI) in participants with major depressive disorder (MDD) and healthy control subjects (HCs). Ketamine had differential effects on brain activity in MDD versus HC participants, with the pattern of activation in MDD after ketamine resembling activation in HCs after placebo. This suggests that ketamine may be involved in normalizing brain function during emotional processing.

Depression is more prevalent in women and is associated with decreases in reward sensitivity and increases in inflammation. In this study, **Moieni *et al.*** (pages 619–626) randomized healthy participants to placebo or endotoxin, which induces an inflammatory response, followed by a reward fMRI task. The authors report that women, but not men, showed reduced activity in the ventral striatum, an area of the brain that responds to rewarding stimuli, after being exposed to the inflammatory challenge. Moreover, for women, but not for men, greater increases in inflammation were associated with greater decreases in reward-related neural activity. These data suggest that women with higher levels of inflammation may be at increased risk for depression via decreased reward sensitivity.

Neural Substrates of Depersonalization Symptoms in MDD

Dissociative symptoms frequently accompany and predict poor outcome in episodes of major depression. In this functional neuroimaging study, **Paul *et al.*** (pages 627–635) tested neural models of dissociative symptoms in female patients with MDD. These models involved patterns of functional connectivity between brain regions implicated in processes such as self-encoding, bodily representation, and emotional valence. The authors found that reduced connectivity between the extrastriate body area and default mode network, regions of the brain that subserve embodiment and egocentric processes, predict increased dissociative symptoms in depression.

Event-Related Potentials: Insights Into Cognitive Deficits

Depression is associated with impaired memory. Here, **Kane *et al.*** (pages 636–643) examined theta power during the retrieval of source and semantic memories in HCs and unmedicated adults with MDD. Theta power was broadly reduced in the MDD group, particularly from 400 to 799 ms post-stimulus. Furthermore, theta power over the parietal midline was positively correlated with source accuracy in control adults but not adults with depression. These data indicate that reduced theta power may contribute to memory deficits in MDD.

Context processing, an executive function that guides goal-oriented behaviors, is disrupted in people with schizophrenia (PSZ), although the underlying neural dysfunction remains unclear. **Kang *et al.*** (pages 644–654) used a targeted context processing task, intraindividual reaction time variability analysis, and event-related potentials (ERPs) to investigate context processing deficits in PSZ. Compared with HCs, PSZ showed generalized deficits in motor speed and ERPs of visual encoding and motor preparation, but also specific deficits in response accuracy and motor control stability for trials with high context processing loads. These specific deficits were predicted by diminished ERPs of prefrontal cognitive control and prefrontal-motor coordination, suggesting that these neural processes may underlie the context processing deficits that are associated with schizophrenia.

Oxytocin and Brain Connectivity in Autism

Intranasal administration of the neuropeptide oxytocin is increasingly considered as a potential treatment for autism spectrum disorder. Here, **Alaerts *et al.*** (pages 655–663) show that higher intrinsic levels of salivary oxytocin in adult men with autism spectrum disorder are associated with increased self-reported feelings of secure attachment as well as with lower levels of functional coupling between the amygdala and hippocampus, key regions of the brain's oxytocinergic system. Additionally, intranasally administered oxytocin was shown to further modulate amygdala-hippocampal connectivity. This work provides an important link between endogenous oxytocin levels and functional variations in oxytocinergic circuitry.

Early Adversity and Amygdala Reactivity to Parent

Parental cues have been shown to decrease amygdala reactivity in children, which may enhance emotion regulation, but the impact of early adversity is not known. **Callaghan *et al.*** (pages 664–671) report that children who had experienced early adversity showed less amygdala reactivity to parent cues, relative to a control group. However, individual differences in amygdala responses within the adversity-exposed group were associated with the parent–child relationship and predicted future anxiety levels. These data suggest that a strong adoptive parent–child relationship may promote long-term mental health in the adopted child.

Smoking Exposure and the Adolescent Brain

Smoking during adolescence increases the risk of nicotine dependence in adulthood, but the associated neural mechanisms are not well understood. Using multimodal neuroimaging

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in a cohort of 14-year-old adolescents, **Chaarani *et al.*** (pages 672–679) found that smoking exposure is linked to reduced ventromedial prefrontal cortex volume and altered corpus callosum connectivity. Additionally, smokers who carried the high-risk genotype of *CHRNA5* showed greater volume reduction effects. These findings provide insight into a neural mechanism in the adolescent brain that may promote nicotine addiction.