In This Issue

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

Neuroimaging Review: Social and Environmental Factors of Brain Dysfunction

Multiple social and environmental factors contribute to the risk for psychiatric disorders. Here, **Crossley *et al.*** (pages 8–15) review the neuroimaging literature that has focused on the effects of poverty, urbanicity, and community violence and discuss the value to be gained from studying these factors in non-Western developing societies. With a particular focus on Latin America, they argue that the magnitude and unequal distribution of social and environmental factors in these communities provide a unique research opportunity. They conclude with describing ongoing approaches.

Dimensional Symptom Approaches to Identify Brain Connectivity Biomarkers

Depression is a heterogenous disorder with wide variability in symptom profiles, which complicates efforts to identify robust biomarkers. **Maglanoc *et al.*** (pages 16–26) assessed symptoms in a large sample of individuals with or without a history of depression and identified five subgroups of depression with distinct symptom profiles. Using functional magnetic resonance imaging (fMRI) in a subsample, they then found that these subgroups were associated with unique patterns of static brain connectivity, with notable distinctions in the frontotemporal network. This dimensional symptom-based approach provides a novel characterization of depression that may aid progression of individual-based treatments.

As in depression, neuroimaging biomarkers in obsessive-compulsive disorder (OCD) have also proven difficult to establish, likely owing to similarly high interindividual variability. Using an individual-level approach with resting-state functional connectivity (FC) MRI data, **Brennan *et al.*** (pages 27–38) were able to identify cortical connectivity signatures that predicted both global and dimensional OCD symptom severity and also tracked symptom change following treatment. These biomarkers were not detectable when using a conventional, population-level atlas, supporting the use of individual-level connectivity analyses to identify dimension-specific connectivity biomarkers in OCD.

Functional Connectivity Development in Infants

Selective serotonin reuptake inhibitors (SSRIs) are commonly prescribed during pregnancy to treat depression, but the effects on neonatal neurodevelopment are not fully understood. **Rotem-Kohavi *et al.*** (pages 39–49) assessed resting-state networks in 6-day-old newborns born to nondepressed women or depressed women who did or did not take SSRIs during pregnancy. Compared with both groups of control infants, SSRI-exposed infants showed increased FC in the auditory network, which has been linked to the development of language processing. These findings may explain the origins of accelerated language development previously reported in infants and children with prenatal SSRI exposure.

Restricted and repetitive behaviors (RRBs) provide some of the earliest markers for a later diagnosis of autism spectrum disorder (ASD). Using behavioral and resting-state fMRI data from infants at risk for developing ASD, **McKinnon *et al.*** (pages 50–61) investigated the brain connectivity underlying the emergence of RRBs. Their results revealed unique patterns of FC associated with restricted, stereotyped, and ritualistic/sameness behaviors, but not self-injury. These relationship patterns were distinct between 12 and 24 months of age. These data reinforce the validity of RRB subcategories in infants and provide insight into early altered FC development in those at risk for ASD.

The amygdala is critical for emotion processing, but how it develops during infancy is not well understood. Using resting-state fMRI in typically developing infants, **Salzwedel *et al.*** (pages 62–71) identified the spatiotemporal dynamics of amygdala FC development, which differed between the first and second years of life. Further, second-year FC growth predicted multiple emotional and cognitive outcomes at 4 years of age. These results advance our understanding of the nonlinear functional development of the amygdala during infancy, which may aid the development of biomarkers for the early detection of infants at risk for behavioral problems.

Early Life Stress and Default Mode Network

Early life stress has lifelong negative consequences. The default mode network (DMN) plays a critical role in one's sense of self and experience of the world, but the effects of stress on DMN functioning is not well understood. **Zeev-Wolf *et al.*** (pages 72–80) used magnetoencephalography in mother-child pairs exposed to chronic war-related trauma and found reduced DMN connectivity in both, but in different oscillatory rhythms—the alpha band in mothers and the theta band in preadolescent children. Intrusive parenting over time, higher cortisol, and posttraumatic stress disorder (PTSD) diagnosis predicted greater DMN connectivity impairments in children, providing insight into the long-term effects of stress on the developing brain.

White Matter Microstructure Alterations: Injury, Stress, and Depression

The symptoms of mild traumatic brain injury (mTBI) can overlap with those of PTSD and the two conditions are commonly comorbid, but whether the mTBI-associated deficits in neural integrity are distinct from PTSD remains unclear. Using

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diffusion tensor imaging, **Klimova *et al.*** (pages 81–90) demonstrate that participants with mTBI have reduced fractional anisotropy in the corpus callosum, brainstem, projection fibers, association fibers, and limbic fibers compared with both trauma-exposed control subjects and participants with PTSD. However, mTBI symptoms were largely explained by PTSD severity rather than by compromised white matter integrity. These data suggest the presence of distinct microstructural alterations in persons with mTBI that are not attributable to PTSD.

The NETRIN1 pathway has been implicated in major depressive disorder. Using diffusion tensor imaging and NETRIN1 polygenic risk scores from a large sample, **Barbu *et al.*** (pages 91–100) found an association between NETRIN1 and lower fractional anisotropy and higher mean diffusivity in several white matter tracts, including the superior and inferior longitudinal fasciculus and thalamic radiations. These data identify a relationship between NETRIN1 signaling pathway variations and white matter microstructure that may be contributing to the etiology of major depressive disorder.