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

Tutorial on Identifying Brain-Behavior Associations

Canonical correlation analysis and partial least squares are powerful multivariate methods for capturing associations across 2 modalities of data (e.g., brain and behavior). In this tutorial, **Mihalik et al.** (pages 1055–1067) give a theoretical and practical introduction to the most common canonical correlation analysis/partial least squares models. The authors examine how dimensionality reduction and regularization techniques impact these models, highlight the importance of the analytic framework, and demonstrate how these models perform in low- and high-dimensional versions of simulated and real datasets.

Obsessive-Compulsive Symptoms in Youth

The presence of obsessive-compulsive symptoms (OCSs) in youth is common and can be developmentally appropriate, but it can also be a precursor for serious psychopathology. However, the neurobiological correlates of OCSs in youth have been understudied. **Alexander-Bloch et al.** (pages 1068–1077) conducted a multimodal brain magnetic resonance imaging analysis in a community sample and found multiple differences in resting-state functional connectivity (FC) networks in youth with OCSs relative to control adolescents. These data point to OCS-linked alterations in brain development that may represent an early marker of psychiatric risk in high-risk youth.

Obsessive-compulsive disorder is a heterogeneous disorder characterized by both internalizing (e.g., anxiety, obsessions) and externalizing (e.g., compulsivity, repetitive behaviors) symptoms. Analyzing data from a large cohort of children with OCSs, **Wu et al.** (pages 1078–1089) identified 2 subgroups, one of which showed high externalizing symptoms, cognitive impairment, and white and gray matter reductions, while the other showed high levels of internalizing symptoms. These findings identify distinct symptom profiles and associated neural correlates of OCSs in children.

Brain Correlates of Inhibitory Control

Inhibitory control is impaired in attention-deficit/hyperactivity disorder (ADHD). In this work, **Chamorro et al.** (pages 1090–1102) conducted a meta-analysis of inhibitory control of eye movements in individuals with ADHD. The authors found that, compared with healthy individuals, people with ADHD show significant impairments in oculomotor inhibition. This analysis helps to provide a more comprehensive picture of oculomotor control dysfunction in ADHD.

Impulsivity is a multidimensional construct, including altered reward processing and impaired response inhibition. Here, **Kaiser et al.** (pages 1103–1115) assessed multiple facets of

impulsivity in a population-based cohort of healthy adolescents who were followed into early adulthood. All measures of impulsivity were correlated, while different measures of impulsivity showed distinct patterns of associated brain activity that changed across development. These data advance the conceptualization of the impulsivity construct and related neural systems across the life span.

Inhibitory control is impaired in individuals with cocaine use disorder, which is believed to be related, in part, to dysfunctional noradrenergic mechanisms. In a randomized, double-blind, placebo-controlled study, **Zhukovsky et al.** (pages 1116–1126) found that atomoxetine, a norepinephrine reuptake inhibitor, improved response inhibition in healthy volunteers and in participants with cocaine use disorder. In both groups, these effects were associated with increased inferior frontal gyrus activation. These results provide insight into the effects of atomoxetine on inhibitory control and the related neural substrates.

FC in Alcohol Use Disorder and HIV

Alcohol use disorder (AUD) and HIV are commonly comorbid. Here, **Honorat et al.** (pages 1127–1136) conducted a whole-brain connectome study and found disrupted FC between the anterior cingulate cortex and the orbitofrontal cortex in individuals with AUD, while individuals with AUD+HIV comorbidity showed disrupted FC between the anterior cingulate cortex and the hippocampus. Altered connectivity was associated with lifetime alcohol consumption and deficits in executive functioning, including heightened impulsivity.

Borderline Personality Disorder and Stress Reactivity

Borderline personality disorder (BPD) is associated with emotion dysregulation and impaired stress reactivity, but the relationship between these traits in BPD is unclear. Using task-based functional magnetic resonance imaging, **Murray et al.** (pages 1137–1148) report that patients with BPD showed heightened corticolimbic reactivity to stress, compared with healthy control subjects and a clinical control group of patients with bipolar disorder. These data provide insight into the neural underpinnings of BPD-specific stress reactivity and suggest that altered stress responding in BPD is distinguishable from other disorders of emotion dysregulation.

Cognitive Mechanisms of Disorder-Specific Symptoms

Paranoia, which can manifest as persecutory delusions, is common in schizophrenia, but the underlying cognitive mechanisms are not well understood. Here, **Sheffield et al.**

(pages 1149–1157) used a behavioral paradigm and computational modeling to find that individuals with schizophrenia who have a stronger expectation (prior belief) that their environment is volatile tend to have higher levels of paranoia. The authors also found that prior beliefs about volatility are related to paranoia, which itself was related to elevated worry. These findings suggest that disrupted belief updating may play a role in symptoms of paranoia in schizophrenia.

Motivational deficit is a core clinical manifestation of depression. Here, **Vinckier *et al.*** (pages 1158–1169) combined a series of behavioral tasks with computational modeling to elucidate the mechanisms underlying motivational deficits in patients with depression compared with healthy control individuals. Across tasks that assessed both performance and preference, patients showed an elevated sensitivity to effort cost, highlighting that effort cost may be a critical dimension that could explain multiple behaviors that are observed in depression.

Reward Processing and Personality in Youth

Adolescence is a critical period for development of personality but also psychopathology. Here, **Frank *et al.*** (pages

1170–1182) tested how reward processing interacts with temperament in adolescent and adult females. The authors found that brain reward response was more pronounced in adolescents relative to adults, particularly in the orbitofrontal cortex and insula, and was related to persistence and reward sensitivity. Associations between personality traits and brain reward response in adolescence may provide insights into the development of adaptive or maladaptive behavior patterns in the transition to adulthood.

Beat Tracking in Williams Syndrome

Individuals with Williams syndrome (WS) exhibit a unique behavioral phenotype including heightened auditory sensitivities, cognitive impairment, and strong musical interests despite variable abilities in rhythm perception. Using electroencephalography, **Kasdan *et al.*** (pages 1183–1191) assessed the ability of individuals with WS to track beat-based rhythms. Compared with control adults, individuals with WS exhibited greater amplitude of auditory evoked potentials and modulations in evoked alpha power, while showing similar evoked beta and gamma activity. These results provide neurophysiological evidence for altered dynamic beat tracking in WS.