Dr. Simon is a pediatric cognitive neuroscientist. His research focuses on the interactions between neural, cognitive, affective and stress biology differences in young people with genetic disorders that produce learning difficulties, behavioral dysregulation and psychopathology. Dr. Simon has spent over a decade and a half investigating how dysfunction in specific neurocognitive processing systems, such as attention, and spatial or temporal processing generates cognitive impairments in thinking about space, time, numbers as was as real world challenges like math, using money and navigation. He has developed and is testing a digital neurotherapeutic intervention (in the form a video game) to minimize such disability. Dr. Simon's current main project is a National Institute of Mental Health funded longitudinal study on risk and protective factors for psychosis proneness in chromosome 22q11.2 deletion (Velocardiofacial/DiGeorge) syndrome based on the interaction of neurocognitive and affective processing and stress reactivity. Besides experimental cognitive processing analyses, Dr. Simon uses cutting edge neuroimaging methods, such as resting state functional magnetic resonance imaging (rs-fMRI), Diffusion Tensor Fiber Tracking as well as Event-Related Potential (ERP) components of electrophysiological studies in order to study the structure, function and connective patterns in the developing brain.
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