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### **Typical and atypical development of brain connectivity**

Brain structural and functional development underlies the maturation of increasingly sophisticated cognitive abilities. In some rare and unusual circumstances, disruptions to both brain structural and functional development create “natural experiments” allowing us to test central questions in cognitive neuroscience regarding plasticity and modularity, and the principles guiding functional brain organization. I will describe studies examining several patient groups (split-brain, hemispherectomy, and autism spectrum disorder) that exhibit acquired or congenital brain connectivity alterations and unique cognitive profiles. Taken together, this diverse group sheds light on the mechanisms and timing of brain network development subserving uniquely human capacities such as language and self-awareness.