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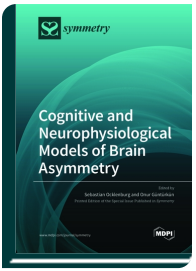
Special Issue Reprint

Cognitive and Neurophysiological Models of Brain Asymmetry



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Asymmetry is an inherent characteristic of brain organization in both humans and other vertebrate species, and is evident at the behavioral, neurophysiological, and structural levels. Brain asymmetry underlies the organization of several cognitive systems, such as emotion, communication, and spatial processing. Despite this ubiquity of asymmetries in the vertebrate brain, we are only beginning to understand the complex neuronal mechanisms underlying the interaction between hemispheric asymmetries and cognitive systems. Unfortunately, despite the vast number of empirical studies on brain asymmetries, theoretical models that aim to provide mechanistic explanations of hemispheric asymmetries are sparse in the field. Therefore, this Special Issue aims to highlight empirically based mechanistic models of brain asymmetry. Overall, six theoretical and four empirical articles were published in the Special Issue, covering a wide range of topics, from human handedness to auditory laterality in bats. Two key challenges for theoretical models of brain asymmetry are the integration of increasingly complex molecular data into testable models, and the creation of theoretical models that are robust and testable across different species.

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