

Cognitive modules: what have we learnt from developmental disorders?

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If the atypical brain presented with a neat juxtaposition of parts intact and parts impaired, then atypical development might be a direct window on normal development, with clear-cut single and double dissociations. Such a view emanates from the model of adult neuropsychological patients whose brains were fully and normally developed until their brain insult. The developing brain is very different. It is neither localised nor specialised at birth, and many months and years are required for the progressive modularisation of the adult brain to occur. The very notion of double dissociation is theoretically and empirically dubious in studies of atypical development. Because development plays such a crucial role in normal and atypical development, and because early on brain regions are highly interconnected, a tiny impairment in the initial state of the brain of a child with a genetic disorder may affect several brain regions and have cascading effects over time on the phenotypic outcome. The outcome may seem domain specific, but it often originates in a domain-general deficit that impacts differentially on different domains.

This talk will consider what we have learned from atypical development about modules, genes and evolution. Each section will first look at the Nativist claims found in the literature, and then re-evaluate them within a neuroconstructivist perspective. In every case, it becomes clear that the notion of cognitive modules is only appropriate for describing the *outcome* in adults after a lengthy process of development over time.

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