

Ph.D. in “Life Course Research” – Psychological curriculum

Academic Year 2023-2024

Title

Developmental Cognitive Neuroscience and the Cognitive Neuroscience of Aging

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Objectives

The Developmental Cognitive Neuroscience (DCN) course module provides an overview of the contribution of methods and knowledge of functional brain development to the understanding of human development. DCN has emerged over the past two decades as a scientific field at the intersection of developmental neuroscience and developmental psychology, where it forms the core of the neuroconstructivist approach. Following an overview of the major aspects of human postnatal cortical development, we will discuss the assumptions, predictions, and evidence supporting the various frameworks for postnatal functional brain development, focusing in particular on the so-called interactive specialization framework. In doing so, we will consider the implications of evidence from DCN for broader issues such as the role of experience and biological constraints, critical and sensitive periods, and the effects of sensory and social deprivation and early adverse experiences.

The Cognitive Neuroscience of Aging course module covers the latest findings. The major challenge is to understand the brain mechanisms underlying age-related differences in cognitive performance while highlighting neuropsychologically preserved and enhanced functions. The latest findings come from studies of the effects of aging on large brain networks. One of these networks, the default network, appears to be particularly vulnerable. There is evidence that age differences in brain structure may affect the relationship between activity in task-related brain regions and behavior, suggesting a complex interplay of structure and function. We will highlight differences between adults with mild cognitive impairment and control subjects, suggesting a continuum of age-related effects and neuropathological brain changes.

Program

Monday and Tuesday afternoon (Lecturer: prof. Viola Macchi Cassia): Developmental Cognitive Neuroscience

Wednesday and Thursday afternoon (Lecturer: prof. Martina Amanzio): The Cognitive Neuroscience of Aging

Suggested lecture

To be indicated during the course