Maastricht University

Developmental Cognitive Neuroscience

Center for European Studies

Developmental Cognitive Neuroscience

Full course description

Course content and structure:

In this course, students will be introduced to the fascinating topic of Developmental Cognitive Neuroscience. Students will learn how we can use neuroscience methods to study the cognitive development of infants, children, and adolescents. We will start by getting to know different methods used in developmental cognitive neuroscience, such as pediatric and infant MRI, EEG, as well as fNIRS. In this context, we will uncover and discuss the benefits and challenges of each approach and the feasibility for studying different age ranges. We will then examine typical brain development as assessed with in vivo MRI (including trajectories of white & gray matter over the life span). Next, we will move on to more specific aspects of cognitive development. Here, we will focus for example on the development of visual processes. For instance, we will learn how learning to read affects the brain and how regions involved in face processing develop throughout childhood to support important social functions such as face recognition.

We will approach these topics using a mix of different formats including a lot of active participation, such as working in subgroups, but also presentations, short lectures & videos.

Course objectives

By the end of this course students should have developed a deeper understanding of different neuroscientific methods (MRI, EEG, fNIRS…) and the specific advantages and disadvantages of each of these approaches for studying typical brain development across infancy, childhood, and adolescence, including the trajectories of white and gray matter development the function and development of high-level visual regions involved in face processing and reading.

Prerequisites

Students should have completed at least two Psychology courses and should be interested in brain development and neuroscientific methods that can be used to uncover developmental processes.

A minimum of 8 students is required for the class to take place.

Recommended reading

We will refer to chapters from the book Developmental Cognitive Neuroscience: An Introduction, 4th Edition by Mark H. Johnson & Michelle de Haan, as well as various research articles.

PNE2007

Period 5
7 Apr 2025 - 6 Jun 2025

ECTS credits:

6.0

Instruction language:
English

Coordinator:
Marisa Nordt

Teaching methods:
Assignment(s), Lecture(s), Presentation(s), Work in subgroups

Assessment methods:
Assignment, Final paper, Presentation

Keywords:
brain development, neuroimaging, EEG, fNIRS, infancy, Childhood, neuroscience, Vision