UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Developmental Cognitive Neuroscience

2324-1-F5108P003

Learning area

KNOWLEDGE AND SKILLS USEFUL TO UNDERSTAND, PROMOTE AND CHANGE INDIVIDUAL PSYCHOLOGICAL FUNCTIONING

Learning objectives

Knowledge and understanding
• The role of developmental processes in shaping the individual, from the perspective of support and prevention
• The importance of mind-brain interactions in development
• The systemic and probabilistic nature of human development
• Implications of neuroscientific findings for the understanding of human development
• The importance of early experiences for cognitive and socio-affective development
• The relevance of mind-brain interactions in development
• The importance of mind-body interactions in development

Applying knowledge and understanding
• Developing the ability to understand and communicate scientific evidence on infant cognition
• Developing critical thinking skills that enable to identify theoretical implications of neuroscientific evidence for the explanation of developmental change
• Applying knowledge of the principles guiding neurocognitive development to understanding the link between early environment and emotional well-being
• Identifying early markers of typical and atypical development
• Understanding of key factors in promoting neurocognitive development
• Applying knowledge of principles guiding neurocognitive development to the enhancement of learning processes
• Applying knowledge of principles guiding neurocognitive development to understanding neurodevelopmental syndromes

Contents

Beginning with the theoretical framework offered by the neuroconstructivist approach, the course aims to illustrate the contribution that methods and knowledge of functional brain development have or could make to understanding the development of human cognition. We will consider the implications of evidence from developmental cognitive neuroscience for broader themes such as the role of experience and biological predispositions, critical and sensitive periods, and the modularity of the human mind. Subject areas will include attention, memory, face perception and social cognition. We will also consider the relationship between motor skills, perceptual experience and learning in childhood. The implications of the neuroconstructivist view of development will be discussed in relation with the trajectories of atypical development in neurodevelopmental syndromes, the impact of early adverse experiences on neurocognitive development and emotional well-being, and the promotion of learning processes.

Detailed program

• The neuroconstructivist approach to psychological development
• Development as a situated, distributed, and probabilistic process
• Methods and populations of developmental cognitive neuroscience
• Models of functional brain development and the Interactive Specialization Model
• The development of attention
• The development of memory
• Implicit learning as the foundation of development
• Social brain development: face recognition, understanding others' behavior, and mentalization
• Early indicators of atypical development
• The impact of environmental deprivation and adverse experiences on neurodevelopment
• Understanding and promotion of learning processes

Prerequisites

Basic knowledge about the classical theoretical models of developmental psychology, with particular reference to Piaget's theory and Cognitivism. Students who lack this knowledge should reach out to the lecturer in order to agree on an ad-hoc bibliography

Teaching methods

In addition to lectures, the course offers guided discussions of video presentations and scientific articles, and group work. Slides and scientific papers are made available to all students (even those who are not attending classes) on the course e-learning site

Assessment methods

The exam is written with oral interview upon request. The written exam includes multiple choice questions and open questions. Multiple choice questions provide extensive evaluation of knowledge acquisition; open questions evaluate students' critical thinking on such knowledge.
Students may ask to attend an oral interview, in addition to the written exam, on all the topics included in the Syllabus.
Evaluation criteria are as follows: response accuracy for multiple choice questions, adequacy of contents, formal organization and terminology for the answers to open questions.
International students can take the exam in English and/or ask for an English bibliography.

Textbooks and Reading Materials

Detailed information about the teaching materials will be posted on the course e-learning site

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING