Situation of the dissertation

Counterfactual inference (i.e., thought about how an event could have turned out differently) is a hallmark of human thought, enabling the capacity to shift from perceiving the immediate environment to an alternative, imagined perspective. Mental representations of counterfactual possibilities provide the basis for learning from past experience, facilitate planning and prediction, and give rise to emotions and social emotions (e.g., regret and blame) that are central for managing and regulating social behavior. Despite the importance of counterfactual inference in guiding human thought and behavior, remarkably little is known about its psychological and neural foundations. This dissertation introduces a cognitive neuroscience framework for understanding the psychological and neural mechanisms of counterfactual inference, drawing upon theoretical developments in cognitive science and emerging neuroscience evidence. This integrative framework proposes that counterfactual inference depends on the coordination of multiple information processing systems that together enable adaptive behavior and goal-directed decision making, and illustrates how these systems are systematically altered by psychiatric illness and neurological disease.

Curriculum Vitae

Nicole Van Hoeck was born the 31th of July 1984 in Turnhout. She received her Master in Psychology at the Katholieke Universiteit Leuven with a thesis titled "The Counterfactual Reasoning Tendency of Seven Year Old Children". Since 2008, Nicole has been a teaching assistant at the Vrije Universiteit Brussel, where she also joined the Social and Affective Neuroscience Lab. In 2012, Nicole received the chance to gain international research experience as an intern at the Decision Neuroscience Laboratory of the University of Illinois at Urbana-Champaign (UIUC). Her dissertation titled “Cognitive and neural foundations of counterfactual inference: Theory, research and clinical implications” synthesized a diverse body of psychological and neuroscience evidence, contributing to our understanding of counterfactual inference and its role in guiding human thought and behavior.