The interaction between arousal and cognitive control

Tromp, J.J.

Chapter 9
Dankwoord

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Curriculum vitae

Jeshua Jelvick Tromp was born on October 25, 1994, in Oranjestad, Aruba. After moving to the Netherlands in 1998, Jeshua pursued his education in the Dutch school system. He graduated from Dominicus College in Nijmegen in 2013 and subsequently enrolled in the honors bachelor's program of the College of Pharmaceutical Sciences at Utrecht University. He participated in the two-year interfaculty Science Honors Program alongside this program, serving as a board member in his second year.

During his bachelor's studies, through the neuropharmacology course, Jeshua discovered his passion for neuroscience and tailored his elective courses accordingly. His degree culminated in an eight-month internship at the UMC Utrecht neuro-immunology lab under the supervision of Niels Eijkelkamp and Hanneke Willemen, where he investigated the biomolecular basis of chronic pain.

Following a gap year working at the UMC Utrecht pharmacy, Jeshua began the Neuroscience & Cognition master's program at Utrecht University in 2017. His first-year internship at the UMC Utrecht Psychiatry Department focused on uncovering the morphological basis of cross-diagnostic hallucinations. He applied machine learning methods to a large dataset of structural MRI scans and contributed to recruiting and testing patients experiencing hallucinations.

In his second year, Jeshua completed a literature review under Jack van Honk, exploring the evolutionary origins of increased working memory capacity in Homo sapiens. He concluded his master’s degree with a nine-month internship at Karolinska Institute in Stockholm under the supervision of Torkel Klingberg, Nicholas Judd, and Bruno Sauce. There, he analyzed a large longitudinal dataset to study how brain and cognitive development interact with socio-economic status and genetics, shedding light on the contributions of nature and nurture in adolescent development.

Jeshua commenced his PhD in Cognitive Neuroscience at Leiden University in October 2019 under the supervision of Prof. Sander Nieuwenhuis. His doctoral research focused on the influence of arousal on cognitive control, specifically investigating how the brainstem arousal system contributes to variability in control-dependent performance. He utilized behavioral paradigms, EEG, pupillometry, and computational modeling to study the dynamics between arousal states and cognitive flexibility.

His research projects included examining the trade-off between cognitive stability and flexibility using task-switching paradigms, investigating the alerting effects of uninformative tones on cognitive control tasks, and studying the effects of spontaneous neural gain

fluctuations on cognitive control. He discussed and presented these works at national and international conferences.

During his PhD, Jeshua founded and chaired the department's Philosophy of Cognitive Modelling Journal Club, facilitating discussions on the conceptual foundations of cognitive models and their applications. He also completed the Groningen Spring School of Cognitive Modeling (University of Groningen) and the Model-Based Neuroscience Summer School (University of Amsterdam).

In addition to research, Jeshua was involved in teaching and curriculum development. As co-coordinator and workgroup teacher for the Experimentation 1 course (2023–2024), he led the transition from commercial software to open-source tools such as Python and OpenSesame. He developed an auto-grading system to simplify assessments and created an online resource for experimental design coursework. He also contributed to courses on cognitive modeling, cognitive robotics, and consciousness, where he delivered lectures and supervised practical sessions. Throughout his PhD, Jeshua published coursework, experimental data, and code associated with his research projects to promote transparency and accessibility in neuroscience.

Currently, Jeshua is employed as a postdoctoral researcher at the Donders Institute (Radboud UMC/University), where he investigates the gut-microbiome-brain axis.