

## Press release

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### Basic information

Name: Victor Pando-Naude Email: [pandonaude@clin.au.dk](mailto:pandonaude@clin.au.dk) Phone: +45 52805306

Department of: Clinical Medicine

Main supervisor: Peter Vuust

Title of dissertation: Top-down and bottom-up processing of music in the healthy and pathological brain

Date for defence: 27<sup>th</sup> September 2021 at (time of day): 15:00 Place: Tvillingeauditorium, Building 1324, Room 011

Press release (Danish)

Ph.d.-forsvar: Victor Pando-Naude

Nyt ph.d.-projekt fra Aarhus Universitet studerer menneskehjernens prædikative mekanismer ved at undersøge musiks effekt på hhv. Parkinsons sygdom og kroniske smerter. Projektet er udført af Victor Pando-Naude, som forsvare sin afhandling d. 27/9/2021.

Resultaterne i denne afhandling bidrager til teorien om predictive coding i musik ved at undersøge mekanismerne involveret i integreringen af top-down og bottom-up hjerneprocesering i den raske og syge hjerne. Vi har undersøgt, hvordan musik-neurovidenskab i en klinisk kontekst kan gøre os klogere på de mekanismer, hvormed den menneskelige hjernen kan kombinere indkommende musikalsk information med interne forestillinger, forudsigelser og/eller forventninger.

I denne sammenhæng er musik et ideelt eksempel på konstant integrering af multimodal top-down og bottom-up mekanismer, da musik aktiverer audio-motor-kobling og andre kognitive og følelsesmæssige processer, såsom nydelse. Måden hvorpå hjernen processerer musik kan således være et nyttig værktøj til at få indsigt i disse komplekse systemer.

Ved at forstå de underliggende mekanismer ved sundhed og sygdom bidrager vi til aktuelle modeller, der forsøger at forklare disse mekanismer. Og en bedre forståelse af mekanismerne kan lede til nye tilgange til behandling.

Forsvaret er offentligt og finder sted den 27/09/2021 i Tvillingeauditorium, bygning 1324, lokale 011, Aarhus Universitet, Bartholins Allé 10, 8000 Aarhus C. Projektets titel er "Top-down and bottom-up processing of music in the healthy and pathological brain." For mere information, kontakt venligst ph.d.-studerende Victor Pando-Naude, e-mail: [pandonaude@clin.au.dk](mailto:pandonaude@clin.au.dk), telefon +45 52505306

Bedømmelsesudvalg:

Professor Per Borghammer, Department of Clinical Medicine, Nuclear Medicine & PET, Aarhus University

Professor Sonja A. Kotz, Department of Neuropsychology & Psychopharmacology, Maastricht University

Associate Professor Jessica Grahn, Brain and Mind Institute, Department of Psychology, University of Western Ontario, London

Press release (English)

PhD Defense: Victor Pando-Naude

New PhD project from Aarhus University investigates predictive mechanisms of the human brain by studying the effect of music on Parkinson's disease and chronic pain, independently. The project was carried out by Victor Pando-Naude, who is defending his dissertation on 27/9/2021.

The results included in this dissertation contribute to the predictive coding framework of music by exploring the mechanisms involved in the integration of top-down and bottom-up brain processing in the healthy and pathological brain. Our studies investigate how music neuroscience in a clinical setting can advance our understanding of the mechanisms that the human brain engages to combine incoming musical information with internal representations, predictions, and/or expectations. In this context, music is an ideal example of constant integration of multi-modal top-down and bottom-up mechanisms, as music engages audio-motor coupling and other cognitive and emotional processes such as pleasure. Thus, how the brain processes music may represent a privileged tool to gain insights into these complex systems. By understanding the underlying mechanisms in health and disease, we contribute to current models trying to explain such mechanisms. In turn, better understanding of these mechanisms may guide future approaches for treatment.

The defence is public and takes place on 27/09/2021 at Tvillingeauditorium, Building 1324, Room 011, Aarhus University, Bartholins Allé 10, 8000 Aarhus C. The title of the project is "Top-down and bottom-up processing of music in the healthy and pathological brain". For more information, please contact PhD student Victor Pando-Naude, email: pandonaude@clin.au.dk, Phone +45 52805306

Assessment committee:

Professor Per Borghammer, Department of Clinical Medicine, Nuclear Medicine & PET, Aarhus University

Professor Sonja A. Kotz, Department of Neuropsychology & Psychopharmacology, Maastricht University

Associate Professor Jessica Grahn, Brain and Mind Institute, Department of Psychology, University of Western Ontario, London, Canada

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