

Press release

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Basic information

Name: Christine Ahrends Email: christine.ahrends@cfin.au.dk Phone: 50491191

Department of: Clinical Medicine

Main supervisor: Peter Vuust

Title of dissertation: Uncertainty and predictability of human brain dynamics at rest, during auditory processing, and under LSD

Date for defence: 7th July 2021 at (time of day): 14:00 Place: Samfundsmedicinsk Auditorium, Building 1262, Room 101

Press release (Danish)

Ph.d.-forsvar: Christine Ahrends

Nyt ph.d.-projekt fra Aarhus Universitet undersøger usikkerhedens og forudsigelighedens rolle i menneskets hjernedynamik ved at studere hjernen i hvile, mens man lytter til musik og under indflydelse af psykedeliske stoffer. Projektet blev udført af Christine Ahrends, som forsvarede sin afhandling den 7/7/2021.

Hjernen er ikke et statisk, men ændrer sin konfiguration over tid, hvilket muliggør udførelsen af komplekse funktioner. De mønstre, som hjernen ændrer sig i over tid (hjernedynamik) kan forklare forskellige aspekter af adfærd og bevidsthed. Dette ph.d.-projekt undersøgte rollen af forudsigelighed og usikkerhed i menneskets hjernedynamik ved at anvende eksempler fra hjernen under hvile, under auditiv behandling og under LSD. Ved hjælp af modeller for statisk og dynamisk hjernefunktion testede forskningen, om det er muligt at forudsige, hvordan en persons hjerne vil reagere på en fremtidig opgave og viste, at der er usikkerhed forbundet med de mønstre, som hjernen ændrer sig i over tid. Projektet fandt ud af, at graden af usikkerhed i hjernedynamikken kan være relateret til en ændret bevidsthedstilstand induceret af psykedeliske stoffer. Uden usikkerhed ville hjernen ikke kunne tilpasse sig sit miljø og i stedet kun følge en forudbestemt vej. At forstå usikkerhedens rolle i hjernedynamikken har stort potentiale i forhold til at bidrage til at blive klogere på den menneskelige bevidsthed og den tidsmæssige organisering af den raske hjerne.

Forsvaret er offentligt og finder sted den 07/07/2021 i Samfundsmedicinsk Auditorium, bygning 1261, lokale 101, Aarhus Universitet, Bartholins Allé 2, 8000 Aarhus C. Projektets titel er "Uncertainty and predictability of human brain dynamics at rest, during auditory processing, and under LSD." For mere information, kontakt venligst ph.d.-studerende Christine Ahrends, e-mail: christine.ahrends@cfin.au.dk, telefon 50491191.

Bedømmelsesudvalg:

Associate Professor Micah Allen, CFIN & AIAS, Aarhus University

Professor Robert Leech, Centre for Neuroimaging Science, Institute of Psychiatry, Psychology and Neuroscience, King's College London, UK

Director Viktor Jirsa, Institut de Neurosciences des Systèmes (INS), Faculty of Medicine, Aix-Marseille University, France

Press release (English)

PhD Defense: Christine Ahrends

New PhD project from Aarhus University investigates the role of uncertainty and predictability in human brain dynamics by studying the brain at rest, while listening to music, and under the influence of psychedelic drugs. The project was carried out by Christine Ahrends, who is defending her dissertation on 7/7/2021.

The brain is not a static object, but it changes its configuration over time, enabling it to carry out complex functions. The patterns in which the brain changes over time (brain dynamics) may explain various aspects of behaviour and consciousness. This PhD project investigated the role of predictability and uncertainty in human brain dynamics, using examples from the brain at rest, during auditory processing, and under LSD. Using models of static and dynamic brain function, the research tested if it is possible to predict how an individual's brain will react to a future task and showed that there is uncertainty associated with the patterns in which the brain changes over time. The project found that the degree of uncertainty in brain dynamics may be related to an altered state of consciousness induced by psychedelic drugs. Without uncertainty, the brain would be unable to adjust to its environment and instead only follow a predetermined path. Understanding the role of uncertainty in brain dynamics has great potential to contribute to resolving questions in the study of human consciousness and the temporal organisation of the healthy brain.

The defence is public and takes place on 07/07/2021 at Samfundsmedicinsk Auditorium, Building 1261, Room 101, Aarhus University, Bartholins Allé 2, 8000 Aarhus C. The title of the project is "Uncertainty and predictability of human brain dynamics at rest, during auditory processing, and under LSD". For more information, please contact PhD student Christine Ahrends, email: christine.ahrends@cfm.au.dk, Phone +45 50491191.

Assessment committee:

Associate Professor Micah Allen, CFM & AIAS, Aarhus University

Professor Robert Leech, Centre for Neuroimaging Science, Institute of Psychiatry, Psychology and Neuroscience, King's College London, UK

Director Viktor Jirsa, Institut de Neurosciences des Systèmes (INS), Faculty of Medicine, Aix-Marseille University, France

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