

Press release

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Basic information

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Department of: Clinical Medicine

Main supervisor: Professor Elvira Brattico

Title of dissertation: Brain spatiotemporal dynamics of auditory patterns encoding and recognition

Date for defence: 12/05/2020 at (time of day): kl. 14.00 Place: Online via Zoom platform

Press release (Danish)

Ny viden om de hjernemekanismer, der ligger bag kodning og genkendelse af musik

Et nyt ph.d.-projekt fra Aarhus Universitet, Health undersøger de hjernemekanismer, der ligger bag kodning og genkendelse af musik. Projektet er gennemført af Leonardo Bonetti, der forsvarede det d. 12/5-2020

Musik er et universelt ikke-verbalt menneskeligt sprog, bygget på logiske strukturer og artikuleret i afbalancerede hierarkier mellem lyde. Musik giver således fremragende muligheder for at udforske, hvordan hjernen skaber mening ud af komplekse auditive mønstre, der udvikler sig over tid. Ved hjælp af magnetoencefalografi (MEG) undersøgte vi derfor de hjernefunktioner, der ligger til grund for kodning og genkendelse af Johann Sebastian Bachs originale og varierede musikalske sekvenser. Både kodning og genkendelse var forbundet med et netværk af aktive og synkrone hjerneområder, der normalt er involverede i auditiv behandling og højere kognitive funktioner, såsom hukommelse, læring og sprogforståelse. Selv om genkendelsen af både Bachs originale og varierede sekvenser rekrutterede de samme netværk, sås der ved Bachs originaler en stærkere aktivitet og synkronisering i hjernen efter den tidsmæssige udvikling af musikken. Denne ph.d.-afhandling kaster nyt lys over de hjernemekanismer, der er forbundet med kodning og genkendelse af musikalske sekvenser, præsenterer nye resultater og videreudvikler avancerede teknikker til at analysere hjerneaktivitet og konnektivitet.

Forsvaret af ph.d.-projektet er offentligt og finder sted den 12/05/2020 kl. 14.00. Forsvaret ledes online ved hjælp af Zoom-plattformen. Titlen på projektet er "Brain spatiotemporal dynamics of auditory patterns encoding and recognition".

For at modtage Zoom-linket for at deltage i forsvaret online og for yderligere oplysninger, du kan kontakte: Ph.d.-studerende Leonardo Bonetti, e-mail: leonardo.bonetti@clin.au.dk, tlf.: +39 3346150761.

Bedømmelsesudvalg:

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Press release (English)

Novel insights on the brain mechanisms underlying music encoding and retrieval

New PhD project from Aarhus University investigates the brain mechanisms underlying music encoding and retrieval. The project was carried out by Leonardo Bonetti and is defended on 12/05/2020.

Music is a universal non-verbal human language, built on logical structures and articulated in balanced hierarchies between sounds. Thus, it offers excellent opportunities to explore how the brain creates meaning for complex auditory patterns that evolve over time. Therefore, by using magnetoencephalography (MEG), we investigated the brain functioning underlying encoding and recognition of Johann Sebastian Bach's original and varied musical sequences. Both encoding and recognition were associated to a network of active and synchronous brain areas usually involved in auditory processing and higher cognitive functions such as memory, learning and language comprehension. Furthermore, even if the retrieval of both Bach's original and varied sequences recruited similar networks, Bach's originals presented a stronger activity and synchronization within the brain, following the temporal evolution of the music. This PhD dissertation shed new light on the brain mechanisms associated to encoding and recognition of musical sequences, presenting novel results and further developing state-of-the-art analysis techniques for brain activity and connectivity.

The defence is public and takes place on 12/05/2020 at kl. 14.00. The defence will be conducted online by using the Zoom platform. The title of the project is "Brain spatiotemporal dynamics of auditory patterns encoding and recognition".

To receive the Zoom link to attend the defence online and for any additional information, please contact PhD student Leonardo Bonetti, email: leonardo.bonetti@clin.au.dk, Phone +39 3346150761.

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