

Press release

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Basic information

Name: David Ricardo Quiroga Martinez Email: dquiroga@clin.au.dk Phone: 5256481

Department of: Clinical Medicine

Main supervisor: Peter Vuust

Title of dissertation: The neural responses to auditory surprise in complex and realistic musical contexts

Date for defence: 13/12-2019 at (time of day): 11:00 Place: Merete Barker Auditorium

Press release (Danish)

Ny viden om hvordan hjernen behandler uventede musikalske lyde

Nyt ph.d.-projekt fra Aarhus Universitet undersøger, hvordan hjernen reagerer på overraskelse ved hjælp af musikalske lyde. Projektet udføres af David Quiroga og forsvares 13. december 2019

Når vi lytter til musik, har vi hele tiden forventninger om de lyde, der kommer. Når disse forventninger ikke indfries af de faktiske lyde, giver det anledning til auditiv overraskelse, som igen genererer hjernerens respons, vækker lytterens opmærksomhed og fremkalder følelser. I det aktuelle ph.d.-projekt blev hjernens respons på forskellige overraskelser undersøgt hos musikere og ikke-musikere ved hjælp af musikalske stimuli, der er mere komplekse og realistiske end dem, der typisk bruges i neurofysiologisk forskning.

Resultaterne afslørede, at kompleksiteten eller forudsigeligheden af musikalske stimuli påvirker hjernens reaktioner på overraskende lyde, en effekt, der kan ses både hos musikere og ikke-musikere. Endvidere indikerede en beregningsmodel, at hjernen holder styr på musikalske forventninger med forskellige niveauer af abstraktion, der går fra lydens sensoriske egenskaber til den kulturspecifikke viden om musikalske stilarter. De nye metoder, der er udviklet, kan bruges til at studere auditiv opfattelse og læring i både sunde og kliniske populationer med komplekse og realistiske musikalske stimuli.

Forsvaret er offentligt og finder sted den 13 / 12-2019 kl. 11:00 i Auditorium 1253-211 (Merete Barker), Aarhus Universitet, Bartholins Allé 3, 8000 Aarhus C. Projektets titel er "de neurale svar på auditive overraskelser i komplekse og realistiske musikalske sammenhænge". For mere information, kontakt ph.d.-studerende David Ricardo Quiroga Martinez, e-mail: dquiroga@clin.au.dk, telefon +45 52526481.

Bedømmelsesudvalg:

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Press release (English)

Novel insights on how the brain processes surprising musical sounds

New PhD project from Aarhus University investigates how the brain reacts to surprise by means of musical sounds. The project is carried out by David Quiroga and is defended 13 December 2019.

When listening to music, we constantly make predictions about the sounds that will follow. These predictions are often violated by the actual sounds, thereby giving rise to auditory surprise, which in turn generates brain responses, draws the listener's attention and elicits emotion. In the current PhD research, the neural responses to surprise of different kinds were investigated in musicians and non-musicians, using musical stimuli that are more complex and realistic than those typically studied in neurophysiological research.

The results revealed that the complexity or predictability of musical stimuli strongly affects the brain's responses to surprising sounds, an effect that can be observed in both musicians and non-musicians. Furthermore, a computational model suggested that the brain keeps track of musical predictions with different levels of abstraction, going from the sensory properties of the sounds to the culture-specific knowledge of musical styles. The novel methods developed can be used to study auditory perception and learning in both healthy and clinical populations, with complex and realistic musical stimuli.

The defence is public and takes place on 13/12-2019 at 11:00 in Auditorium 1253-211 (Merete Barker), Aarhus University, Bartholins Allé 3, 8000 Aarhus C . The title of the project is "the neural responses to auditory surprise in complex and realistic musical contexts". For more information, please contact PhD student David Ricardo Quiroga Martinez, email: dquiroga@clin.au.dk, Phone +45 52526481..

Assessment committee:

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