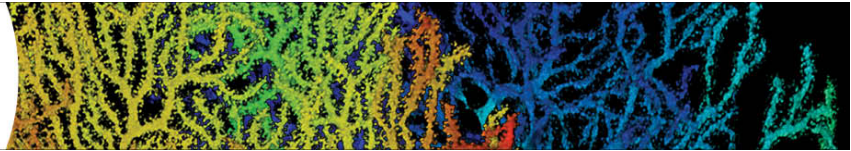




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Session 558 - Emotion Processing in the Human Brain

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558.05 / HH4 - Erp responses to emotional conflict in youth: age and gender differences

📅 November 15, 2022, 1:00 PM - 5:00 PM

📍 SDCC Halls B-H

Presenter at Poster

Tue., Nov. 15, 2022 4:00 PM - 5:00 PM

Session Type

Poster

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Citation

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Abstract

The maturation of brain systems for affective control underpins changes in emotion-regulation during adolescence that impact social functioning and mental health. Boys and girls differ in the expression and regulation of emotion, but the role of gender in the development of affective control is not fully understood. The present research aimed to investigate effects of age and gender on brain activity during performance of an emotion conflict task in healthy adolescents, additionally its relation to emotional intelligence. The study was approved by the local Ethics Committee. Electroencephalogram (EEG) was recorded from 50 participants (mean age 15.88 SD=2.62) during task performance based on emotional pictures from Databrary database (Benda&Scherf, 2020) by using ANT Neuro with 64 electrodes. Participants had to differentiate congruency of auditory and visual stimuli with emotion expressed in four types of basic emotional faces (fear, sad, anger, happy). Conflict was manipulated by overlaying emotion names that were congruent or incongruent with the face. The EEG/ERPlab toolbox (Lopez-Calderon& Luck, 2014) was used for preprocessing and measurements of N170 amplitude for P7, P8 and average P300 amplitude for the networks (central, anterior, posterior, left and right hemisphere) in sex and age groups (12-15 and 16-20 y.o.). Behavioral data analysis revealed significant within subject main effects of condition (slower to incongruent, $F=17.973$, $p=0.00$) and emotion (slower to sad faces, $F=11.066$, $p=0.02$), an emotion*condition interaction ($F=10.305$, $p=0.02$), a and a gender effect (slower in boys, $F=5.025$, $p=0.030$). N170 amplitude analysis for P8 electrode showed a significant emotion effect (more negative amplitude for angry face, $F=2.812$, $p=0.042$). There were also significant emotion*condition ($F=2.818$, $p=0.041$) and emotion*condition*age ($F=2.716$, $p=0.047$) interactions. P300 amplitude analyses showed a significant decrease with age in central network ($F=4.647$, $p=0.036$) for incongruent face. Increased P300 amplitudes in central ($F=4.144$, $p=0.047$) and left hemisphere networks ($F=3.434$, $p=0.007$) were observed for happy face in females in comparison to males. A subsidiary aim was to test for individual differences in brain activation. We report correlations between N170 and P300 amplitude with indexes emotion regulation. In conclusion, the study shows gender and age differences in neural response to emotion conflict that varied with emotion and brain network. These findings contribute to understanding gender differences in regulating emotion as the brain matures during adolescence.