

Attenuated electroencephalographic activity following risk-taking in high risk drivers

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Background: High-risk drivers (HRDs) contribute disproportionately to road traffic crashes by repeatedly engaging in behaviours such as speeding and driving while impaired (DWI). Therefore, early detection and injury prevention strategies would benefit from identifying the underlying neurobiology of HRD behaviours. Previous work has identified abnormal electroencephalographic (EEG) activity as being associated with impaired decision-making, a characteristic displayed by many high-risk drivers. Specifically, an attenuated EEG signal following impaired decision-making distinguished between participants who continued to engage in risky behaviours and a reference group.

Objectives: Investigate whether this pattern of abnormal EEG activity could be a neurobiological marker for high-risk drivers, and be used to distinguish high-risk drivers from the heterogeneous driving population.

Methods: Two groups are re-recruited from the lab's database: HRDs and non-offenders (n=20, N=40). HRDs include licensed drivers convicted of 3+ HRD events within a 2-year period (road or criminal conviction, first DWI conviction, refusal to provide a breath sample, DWI recidivism). Non-offenders do not fulfill HRD criteria. Participants will undergo electroencephalography (EEG) while being submitted to the Game of Dice Task, a neuropsychological task that assesses aversion/attraction to risky decision.

Expected Results: HRDs will exhibit more impaired decision-making, linked to behavioral risk-taking, than non-offenders. HRDs exhibiting impaired decision-making will also display an attenuated EEG response following risk-taking in the neuropsychological task compared to non-offenders.

Anticipated Conclusions: Analysis will establish whether an attenuated EEG response distinguishes HRDs from non-offenders. Future studies will investigate the explanatory potential of EEG response to impaired decision-making and risk-taking behaviours.

Biography

Kaitlyn Enright completed her Bachelor of Science degree at the age of 22 years from Dalhousie University and is currently pursuing her Master's degree in Psychiatry at McGill University. She is a student researcher in the Addiction Research Program at the Douglas Mental Health Research Center, a premier research facility. She has won a competitive provincial award in support of her research, a graduate excellence award from her university, two poster competitions, and various other awards in recognition of her charitable work.

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