

Some theorize that oxytocin can positively influence the relationship between the hypnotist and the subject, and supposedly is one of the important factors behind the fast improvement that results from hypnotherapy. The present study examines the role of oxytocin during the dyadic interaction using active-alert induction.

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Information processing of schizophrenic patients in the visual modality

The ability to feel agency has been associated with internal forward modelling, which is considered to rely primarily on sensory predictions. Some psychopathological symptoms are associated with these predictions' dysfunction, for example, hallucinations and the feeling of „being influenced” in schizophrenia. Although the neural correlates of this phenomenon could be relevant to understand the psychotic features, only a few results were published in the visual modality. In this research plan I will present a protocol suitable for investigating prediction-related modification of visual processing among schizophrenic patients by analysing event-related potentials over the occipital cortex elicited by images depicting hands.

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Examining neural glucose transporters

Glucose is the primary source of energy for mammalian cells. Cells use glucose transporters (GLUT) to uptake glucose from the extracellular space. A disruption in glucose metabolism is characteristic of many central nervous system disorders, such as Alzheimer's disease, Huntington's disease, autism or attention deficit hyperactivity disorder

(ADHD). Our ongoing research focuses on GLUT1 and GLUT3, which are more abundant in the central nervous system (CNS) than other isoforms.

Our research builds on recent data which found that a CNS involving GLUT3 more frequent in ADHD population. A humanized transgenic mouse model with an additional copy of the SLC2A3 gene encoding the GLUT3 protein was constructed. My task and goal is to monitor these transgenic mice for any phenotypical differences compared to the wild type. I performed behavioural tests (blinded for genotype) including Open Field, Elevated Plus Maze, Morris Water Maze and 3 Chamber Sociability Test. Genotyping is in progress, my next step is the assessment of these tests. Future plans include a closer investigation of GLUTs, as there is currently limited information in the literature regarding how the glucose transporter activation is affected by conditions outside the normal physiological range, such as fasting or high glucose feed. My long-term plans include investigating the potential effect of a changing glucose supply on the expression of GLUT1 and GLUT3 and whether the modification of GLUT expression offers any potential therapeutic options for treating diseases of the central nervous system.

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From behavioural addictions to substance related disorders: neurocognitive aspects of impulsivity

Impulsivity is a multifaceted factor that is crucial in understanding addictive disorders. Gambling disorder (GD) and alcohol use disorder (AUD) share common characteristics, which are represented in the recategorisation of GD in DSM-V. The altered functioning of ventral areas (particularly vmPFC and OFC) is associated with reward responsiveness and cognitive impulsivity both in GD and AUD, but the extent is yet to be ascertained.