NEUROABSTRACTS

EXAMINING THE INFLUENCE OF INSTAGRAM STATUS ON SENSE OF AGENCY

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Power is an interpersonal construct where the powerful have control over the social, economic, and physical resources of others. Previous studies have found that power priming influences one's sense of agency (SoA). SoA is the feeling of control over your actions and the outcomes of those actions, as indexed by the intentional binding task. The intentional binding paradigm suggests that individuals experiencing a higher sense of agency tend to make shorter time interval estimates between their actions and outcomes. Previous research using the intentional binding task has found that interval estimates tend to be longer for individuals of low power compared to those of high power. With the increasing popularity of social media use, people look to these sites for social connection, opening a new avenue for social status hierarchy. This hierarchy exists on Instagram, a social media network where people follow others and have others following them. This follower/following (F/F) ratio is an index of online power, where users can be categorized as "leaders" (have more followers than they are following) or "followers" (following more people than they have following them). The aim of the current study is to investigate whether online social status, indexed by the F/F ratio, can alter one's SoA. Participants will complete a baseline and post-prime block of the intentional binding task. In between blocks, they will write down their F/F ratio, in place as a prime for their sense of online status. When comparing post-prime block estimates, we predict that Instagram "leaders" will give shorter overall estimates, whereas "followers" will give longer overall estimates. Such evidence could validate and extend previous research on the effects of real-life power on SoA, suggesting that online and real-life power may have concordant effects.

GENE EXPRESSION ANALYSIS UPON ADMINISTRATION OF PAOPA AND ITS POTENCY TO TREAT SYMPTOMS OF SCHIZOPHRENIA

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Schizophrenia is a chronic mental disorder that affects more than 21 million people worldwide. 3(R)-[(2(S)-pyrrolidylcarbonyl) amino]-2-oxo-1-pyrrolidineacetamide (PAOPA), the positive allosteric modulator of the dopamine D2 receptor, has previously demonstrated the potential to treat the negative cognitive symptoms associated with schizophrenia. To investigate the molecular effects of the drug, it was hypothesized that PAOPA administration would significantly alter gene expression in the striatum of Sprague-Dawley rats. RNA sequencing was performed to analyze differential gene expression and the results revealed a significant overexpression in the calcium-binding protein, parvalbumin (PVALP). PVALP was further investigated because previous research published by our lab has shown decreased levels of PVALP mRNA in schizophrenia. RT-qPCR demonstrated that PAOPA significantly increased mRNA expression of PVALB in vivo. PVALB can modulate gamma-aminobutyric acid neuron activity and potentially control impaired gamma-band oscillations, which are an underlying cause of cognitive schizophrenic symptoms. The implication of PVALB in schizophrenia provides further support for PAOPA as a novel therapeutic which has the potential to treat schizophrenic symptoms. Further research should investigate changes in PVALB protein levels in an animal model of schizophrenia and elucidate the molecular mechanism through which the drug alters PVALB expression.

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AN EXPLORATORY STUDY OF IMPULSIVITY DIFFERENCES BETWEEN RECREATIONAL AND MEDICINAL CANNABIS USERS

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Background: Individuals who use cannabis demonstrate high levels of impulsivity, which is defined by rapid action without careful consideration and planning. Previous studies have examined a link between cannabis use and increased impulsivity, but differences between medicinal and recreational cannabis users have not yet been explored. It is important to understand impulsivity differences in cannabis-using subgroups, as this trait is associated with increased vulnerability to substance use disorders.

Methods: To investigate differences in impulsivity between medicinal and recreational cannabis users, a community sample of 55 regular cannabis users was recruited from the Hamilton area. Participants were grouped into a recreational cannabis use group (n=20), a combined medicinal+recreational use group (n=29) and a medicinal-only use group (n=6). Participants completed the Barratt Impulsivity Scale (BIS-11), a validated self-report measure of impulsivity including an attentional, motor, and non-planning subscale.

Results: Total and subscale impulsivity scores did not significantly differ between the three groups. There was a trend for the medicinal-only users to display lower total BIS-11 and motor impulsivity scores than the other two groups (p-values<0.075).

Conclusions: These exploratory trends suggest that impulsivity might differ between recreational, medicinal+recreational, and medicinal-only cannabis users. Medicinal-only users may have lower impulsivity rates, driven by lower motor impulsivity. Larger, demographically-matched samples should be studied to better understand the difference in impulsivity amongst recreational and medicinal cannabis users, as well as transitions to problematic use. Future studies can also examine specific features of cannabis use, including motives for use, drug potency, and other forms of impulsivity. Uncovering differences between cannabis-using subpopulations can help develop better policies and regulations surrounding the use of the drug in different settings.

GENDER EFFECTS IN THE HUMAN BRAIN: A VOLUMETRIC IMAGING ANALYSIS

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A major ongoing research question in neuroscience is how the structure of the brain underlies and influences human behaviour. Studies have consistently found that on average, males have larger brain volumes than females. The current study analyzed 1113 whole-head anatomical magnetic resonance images from the Human Connectome Project to identify volumetric gender differences across 39 subcortical structures in the human brain. The subjects represent young adults aged 22-37 years. Using an ANCOVA statistical framework, we explored the relationship between gender and brain structure volume, while considering age as a cofactor. Statistical analysis revealed a significant difference in volume between genders in 37 of the regions analyzed, with males having larger volumes by 3-28%. Significant effects of age were identified in 21 regions, with no significant age by gender interactions identified. Our findings may provide insight into different areas of research, such as cognitive function and gender-based psychiatric disorders.

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