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BRAIN ABNORMALITIES ASSOCIATED WITH STIMULANT DEPENDENCE - DOES GENDER MATTER?

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Introduction: According to the United Nations, women are less likely to use illicit drugs compared with men. This gender gap is poorly understood, possibly because female drug users are underrepresented in research studies and treatment.
Objectives: We test the hypothesis of gender differences in neural mechanisms mediating addiction.
Aims: We aimed to explore gender differences in terms of trait-impulsivity, cognitive function, and brain structure in stimulant-dependent individuals.
Methods: We re-analysed exiting neuroimaging and behavioural data on stimulant-dependent individuals (*n*=37; 17 females) and healthy controls (*n* =40; 20 females), all matched for demographic variables. Male and female substance users were additionally matched for the type, duration and severity of stimulant use. Behavioural measures included substance use variables, impulsivity and depression scores, and measures of visual sustained attention. ANOVAs using planned contrasts, *t*-tests and Chi-square tests were employed to examine group and gender differences.
Results: Consistent with previous studies, stimulant-dependent individuals showed significant, widespread reduction in grey matter volume. Gender differences were observed within both stimulant-dependent individuals and healthy controls in the left parahippocampal gyrus: males showed grey matter reduction in this region relative to females. Stimulant-dependent individuals exhibited higher levels of impulsivity compared with healthy controls, but no gender differences were observed here. Aside from response time on the sustained attention task, there were no further group differences in any of the behavioural measures.
Conclusions: We found evidence for gender differences in brain structure between stimulant-dependent individuals and healthy controls, which can be statistically controlled for by matching for gender.

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