

Impaired response inhibition is associated with self-reported symptoms of depression, anxiety, and ADHD in female FMR1 premutation carriers

Claudine M. Kraan, Darren R. Hocking, Nellie Georgiou-Karistianis, Sylvia A. Metcalfe, Alison D. Archibald, Joanne Fielding, Julian Trollor, John L. Bradshaw, Jonathan Cohen and Kim M. Cornish

AMERICAN JOURNAL OF MEDICAL GENETICS PART B:
NEUROPSYCHIATRIC GENETICS

Volume 162, Issue 7, October 2013

Published Online : 26 OCT 2013 11:05AM EST, DOI : 10.1002/ajmg.b.32203

Fragile X Mental Retardation 1 (FMR1) premutation carriers (PM-carriers) have a defective trinucleotide expansion on the FMR1 gene that is associated with continuum of neuropsychological and mental disorders. Currently, little is known about the distinct subcomponents of executive function potentially impaired in female PM-carriers, and there have been no investigations into associations between executive function and incidences of mental disorders. A total of 35 female PM-carriers confirmed by Asuragen triple primed PCR DNA testing and 35 age- and intelligence-matched controls completed tests of executive function (i.e., response inhibition and working memory) and self-reported on social anxiety, depression, and ADHD predominantly inattentive (ADHD-PI) symptoms. Compared to controls, PM-carriers were significantly elevated on self-reported social anxiety and ADHD-PI symptoms. Irrespective of mental symptoms, female PM-carriers performed significantly worse than controls on a response inhibition test, and further investigations revealed significant correlations between executive function performance and self-reported symptoms of anxiety, depression and ADHD-PI. Critically, among PM-carriers with good executive function performance, no women exceeded threshold markers for probable caseness of mental disorder. However, rates of probable caseness were elevated in those with average performance (response inhibition: social anxiety: 41.7%; depression: 20%; ADHD: 44.4%; working memory: social anxiety: 27.3%; depression: 9.1%; ADHD: 18.2%) and highly elevated for those with poor executive function performance (response inhibition: social anxiety: 58.3%; depression: 80%; ADHD: 55.6%; working memory: social anxiety: 100%; depression: 50%; ADHD: 83.3%). These data suggest that subtle executive dysfunction may be a useful neuropsychological indicator for a range of mental disorders previously reported in female PM-carriers.