Genetic and Environmental Epidemiology of Attention Deficit Hyperactivity Disorder in Young Australian Adults

Jane Ebejer

Bachelor of Psychology (Honours)

University of New England 2008

A dissertation submitted for the degree

of Doctor of Philosophy of the

University of New England

August 2013

I certify that the substance of this dissertation has not already been submitted for any degree and is not currently being submitted for any other degree or qualification. I certify that any help received in preparing this dissertation and all sources used have been acknowledged in this dissertation.

Acknowledgements

I am deeply grateful to David Duffy and Sarah Medland for the support and encouragement they have provided for the duration of this work. And thankyou to Julius van der Werf for facilitating my departmental move at UNE and transition into behaviour genetics. The unique expertise of each of my supervisors has added a richness to my experience for which I am indebted. I cannot exclude the contribution made by each of the students, post-doctoral fellows and research staff working in genepi. Thankyou to Miguel for your consistency, Robyn for your liveliness and Natalie for your warmth and concern. Matthew's comments have made me laugh and Aniket and Gabrielle were kind enough to help out with computer code when I was lost. Lui has been inspiring and Yvonne, Michelle and Ada have provided me with warmth and conversation that has kept me sane at times. Thankyou to Lorelle, Kim, Kerrie and Narelle for your stability and to Nick for your brilliance and charisma and for providing me with the opportunity to do this work. All our daily interactions have soothed me and provided a diversion from the glare of the computer screen. And last but not least, I would be lost without the friends who have walked with me on this profound journey.

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Abstract

The inattentive and hyperactive-impulsive behaviours that comprise attention-deficit hyperactivity disorder (ADHD) have been documented by physicians over the last two centuries. It is well established that ADHD is associated with mild to severe disadvantage across multiple domains such as peer and family relations, academic achievement, emotional and physical health, driving behaviours and employment opportunities, alcohol abuse and dependence, increased divorce and lost work productivity. There are often comorbid conduct problems that compromise development and increase symptom related disadvantage, around 50% of children affected by ADHD continue to be disadvantaged by this syndrome as adults. However less work has been done to characterise ADHD in adults' and few studies have examined the occurrence of this syndrome in Australian adults. A series of four studies were conducted; the first study shows the persistence of symptoms into adulthood was 55.3%, resulting in a prevalence of 1.1% for a young adult sample. This study also indicated women with ADHD reported greater exposure to environmental adversity during childhood than men with ADHD (p <.001 and p > .05 respectively). Within the second study, latent class analyses provided an alternative perspective to the disadvantage associated with different groups of symptoms and showed women with inattention, combined symptoms and conduct problems experienced greater difficulties than men with the same symptoms. Additionally there was a higher monozygotic than dizygotic twin concordance for symptoms of hyperactivity-impulsivity (z = 4.42) and conduct problems (z = 2.19) suggesting a genetic component to class membership. The third study used classical twin methodology to show unique environmental factors accounting for variation in ADHD differed by sex (p < .05), supporting the results of the preceding studies. This study also explored differences in heritability estimates and self, versus mother's report of ADHD symptoms indicating that the drop in heritability that occurs in adulthood is due to greater error variance in self-reported symptoms and a genetic component influencing maternal report of symptoms. The fourth study utilised a unique dimensional measure of ADHD for genome-wide association, there were no significant genetic associations between inattentive, hyperactive-impulsive or combined type behaviours. The strongest association was between symptoms of hyperactivity-impulsivity and rs2110267 (4.62×10^{-7}).