

Project Details	
Project Code	MRC21PHCa Jones
Title	The cognitive and genetic overlap between autism and anorexia nervosa
Research Theme	Population Health
Summary	Autism and anorexia nervosa are two distinct clinical conditions that are highly co-occurring. To better understand this overlap, the PhD will investigate the longitudinal association between cognition, autistic traits and anorexia, the shared genetic architecture of both disorders, and the causal links between them.
Description	<p>Anorexia nervosa (AN) and autism are highly co-occurring, with 20-35% of women with AN meeting diagnostic criteria for autism (Westwood &amp; Tchanturia, 2017). This is a significant over-representation; approximately 1% of the population are diagnosed with autism (Loomes et al., 2017). Moreover, autistic traits are generally elevated in AN populations (Westwood et al., 2016). At face value, this co-occurrence may seem surprising. Autism is a neurodevelopmental condition defined by social communication difficulties and restricted and repetitive behaviours (APA, 2013), while AN is an eating disorder characterised by significantly low body weight and atypical behaviours and cognitions related to this low weight (APA, 2013). One interpretation is that the effect of starvation in AN may mimic autistic traits, leading to a 'pseudo-autistic' presentation including cognitive rigidity and poor mentalising (Treasure, 2013). However, autism rates remain high even for women who have recovered from AN (Bentz et al. 2017) and there is evidence of autistic behaviours predating AN (Vagni et al., 2016). Our interviews with autistic women with AN suggest autism-specific mechanisms (e.g. cognitive or sensory) may in part drive their eating disordered behaviour (Brede et al., 2020). Therefore, the high co-occurrence of autism and AN may reflect a starvation-induced autism phenocopy being mislabelled as 'true autism', the expression of autistic traits being misinterpreted as 'true AN', shared genes and associated shared endophenotypes, or a complex combination of these factors. We have found that autistic women find their treatment for AN unhelpful and that clinicians report challenges in treating women who present with both autism and AN (Babb et al., in review). Insight into both the shared cognitive, behavioural and genetic underpinnings of autism and AN is critical to developing better support and treatments for both conditions. The current PhD offers an exciting opportunity to combine state-of-the-art psychological and genetic methods to better understand this overlap. The student will benefit from an innovative interdisciplinary approach that brings together neurodevelopmental psychology, clinical psychopathology and genetic epidemiology: Study 1 will utilise the Adolescent Brain Cognitive Development (ABCD) database, a landmark longitudinal study of child brain development, health and cognition including data from 21 sites. The student will develop and test relevant hypotheses from a psychological perspective, with a focus on how autistic traits and distinct cognitive profiles may predict future eating disordered behaviour. Study 2 will be based on publicly available genome-wide summary data of autism (Grove et al., 2019) and anorexia (Watson et al., 2019). The student will use Linkage Disequilibrium score regression and genomic structural equation modelling to investigate if</p>

	<p>there is a shared common genetic factor underlying both autism and AN. Study 3 will be based on UK Biobank data. The student will use genetic variants (Grove et al., 2019; Watson et al., 2019), which can be used as instrumental variables, in a Mendelian Randomization analysis (Davey Smith &amp; Hemani, 2014). This final study mimics a natural experiment where the participants are randomly assigned to higher or lower autistic traits by their genetic variants and will enable, under certain assumptions, assessment of the causal association with anorexia. The PhD will lead to better understanding of the high prevalence of autism and AN, from both psychological and genetic perspectives. Results will be communicated in peer-reviewed journals, at international conferences (e.g. International Society of Psychiatric Genetics; International Society for Autism Research), and through public and professional engagement. The findings have potential to inform clinical practice, particularly the treatment of individuals with a complex presentation autism and AN.</p>
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#### Supervisory Team

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