Project Details	
Project Code	NMH27Ca Chawner
Title	Finding the Earliest Signs of Psychosis: Studying Young People at High Genetic Risk
Research Theme	Neuroscience & Mental Health
Project Type	Dry lab
Summary	Why do some young people develop psychosis while others do not? This project will investigate the developmental origins of psychosis in young people at high genetic risk. Using unique clinical and population-based datasets, the student will identify early-life factors that influence the emergence of psychotic symptoms. The project will explore how genetic risk interacts with childhood experiences, behaviour, development and environmental influences to shape mental health outcomes. Combining state-of-the-art data science methods with lived experience coproduction, this research aims to improve early identification of young people most at risk of psychosis and inform future prevention and intervention strategies.
Description	Psychotic disorders are among the most disabling mental health conditions, yet the developmental pathways leading to psychosis remain poorly understood. A range of small mutations known as neurodevelopmental copy number variants (ND-CNVs) are among the strongest known genetic risk factors for a range of psychiatric outcomes, including psychosis. However, not all individuals carrying these genetic variants develop psychotic symptoms, suggesting that additional developmental, behavioural and environmental risk factors influence outcomes. Understanding which early-life characteristics predict later psychosis risk could improve early identification and inform targeted prevention strategies. This project will investigate the longitudinal development of psychosis risk in individuals carrying ND-CNVs by integrating evidence from both clinically ascertained and population-based cohorts. The student will work with data from the Cardiff University ECHO study a unique clinical cohort of individuals with ND-CNVs ascertained from UK NHS medical genetic clinics, alongside large UK longitudinal population studies including Born in Bradford (BiB) and the Avon Longitudinal Study of Parents and Children (ALSPAC). Together, these datasets provide a powerful opportunity to examine how psychosis risk emerges across childhood and adolescence in individuals at high genomic liability. The overarching research question is: Which early-life medical, developmental, behavioural and environmental factors predict later psychosis risk in young people at high genomic risk? The project will begin with a comprehensive literature review of psychosis development, ND-CNVs (including 22q11.2 Deletion Syndrome) and established psychosis-risk indicators. A key feature of the project will be the incorporation of lived experience perspectives from individuals and families affected by ND-CNVs. This work will help identify and prioritise variables that are both scientifically meaningful and relevant to affected communities. Potential domains may include birth and obstetric factors, childhood behavioural difficulties, emotional symptoms, neurodevelopmental characteristics, cognitive functioning, social experiences and family or environmental risk factors.

	The student will then examine longitudinal data from the ECHO study to identify early-life factors associated with emerging psychotic symptoms among individuals at high genetic risk. Analyses will explore behavioural trajectories across childhood and adolescence and determine which characteristics are associated with later psychosis-related outcomes. To assess the generalisability of findings, the student will subsequently investigate analogous measures within individuals with ND-CNVs in longitudinal population-based cohorts, including BiB and ALSPAC. These analyses will allow comparison of developmental pathways between individuals with ND-CNVs who have been clinically ascertained as well as those within the general population (who may not necessarily have a clinical genetic diagnosis), providing insight into whether similar risk processes operate across different study designs. The final stage of the project will focus on risk stratification. Drawing together findings from multiple cohorts, the student will investigate the extent to which combinations of early-life indicators can identify subgroups of individuals with ND-CNVs who are at particularly high risk of developing psychotic symptoms. This work has the potential to support future approaches to early identification and intervention in genetically vulnerable populations. Project Objectives The student will work towards the following objectives: 1. Scoping: Conduct a systematic review of the literature on developmental antecedents of psychosis and psychosis-risk markers in individuals at high genomic risk. Engage with lived experience stakeholders to identify and prioritise candidate predictors of psychosis risk. 2. Characterise longitudinal developmental trajectories associated with psychosis risk in the ECHO ND-CNV cohort. 3. Investigate early-life antecedents of psychosis risk in young people with ND-CNVs using large population cohorts including BiB and ALSPAC. 4. Compare findings across clinical and population cohorts to identify common and distinct sets of risk factors and developmental pathways to psychosis. Develop and evaluate risk stratification approaches for identifying clinically high-risk subgroups within genetically vulnerable populations. 5. Disseminate findings through conference presentations and peer-reviewed publications. Student Ownership and Development Opportunities The project provides substantial opportunities for the student to develop independence and shape the direction of the research. Following the initial literature review and stakeholder engagement activities, the student will have considerable flexibility to refine specific research questions, prioritise candidate risk factors, and contribute to methodological decisions. They will gain training in psychiatric epidemiology, longitudinal data analysis, developmental psychopathology and genomics, while working within a multidisciplinary supervisory team. The student will lead analyses, present findings at national and international conferences, and develop first-author

	publications arising from the project, enabling them to take significant ownership of the scientific outputs and direction of the PhD.
Can be completed part time?	Yes
Supervisory Team	
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