

The influence of sleep on brain development and psychopathology over adolescence

We are seeking an enthusiastic student with an interest in sleep, psychiatry and development. This project is suitable for an Honours or Masters course.

Project Description

Sleep is crucial to support overall wellbeing and optimal functioning of the body, particularly the central nervous system. Adolescence is a critical developmental period marked by changes in behaviour, in concert with substantial changes to both bodily and brain systems. This includes striking changes occurring to the structure of, and propensity for, sleep, as well as to the structure and function of the brain. The parallels between developmental sleep patterns and brain maturation suggest that sleep and brain development are closely intertwined.

It is common for many adolescents to experience disturbances in sleep. Poor sleep behaviour has been associated with impairments in cognition as well as a number of socio-emotional behaviours and poor outcomes. However, while there is a robust relationship between poor sleep and psychopathology in adolescents, the mechanism(s) that might underlie this relationship are yet to be elucidated. Alterations to neurodevelopment is one such mechanism. However, few studies have examined the relationship between sleep, brain structure and psychopathology in adolescence, particularly using longitudinal designs.

The current study will use imaging and associated sleep and psychopathology data from the Adolescent Developmental Study. The aim of the study is to 1) characterize the relationship between sleep parameters and grey matter structure across adolescence; 2) determine whether sleep disturbance is related to, and predicts, later psychopathology; and 3) determine whether changes to brain structural development may mediate the relationship between sleep behavior and psychopathology.

The project will take place at Melbourne Neuropsychiatry Centre, Department of Psychiatry, The University of Melbourne under the supervision of Dr Vanessa Cropley, A/Prof Sarah Whittle and Ms Rebecca Cooper.