**BBSRC MIBTP Studentship Project**

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| **Project Title** | Understanding the relationship between higher-level cognition and disruptive behaviour in typically developing children and young adults. |
| **Project Summary**  |
| Background Disruptive behaviour (e.g., aggression) amongst typically developing children and young adults represents a significant challenge for caregivers, families and support networks, educational settings, and wider society. Such behaviour is associated with poorer short- and long-term outcomes, including low educational achievement and employment rates, worse physical and mental health outcomes, and higher rates of criminal behaviour (e.g., Lichtenstein, Cederlöf, Lundström et al., 2020). It is therefore critical to further our understanding of the causes and processes associated with the development of disruptive behaviour. Prior research has shown a relationship between disruptive behaviour and cognition. For example, impairments in executive control (a set of cognitive functions linked to goal-directed behaviour) are linked with disruptive behaviour in both clinical and non-clinical populations. The nature of this relationship is complex; early deficits in executive control are predictive of later disruptive behaviour (for example, deficits in inhibitory control could lead to difficulties in regulating behaviour). Conversely, early disruptive behaviour has also been found to be predictive of later deficits in executive functioning (for example, disruptive behaviour may lead to fewer opportunities to develop executive control during contact with peers and caregivers).  The relationship between disruptive behaviour and higher-level cognition (e.g., reading), however, remains poorly understood. Again, this relationship may be complex. Early deficits in higher-level cognition may contribute to the development of disruptive behaviour (e.g., reading difficulties may lead to frustration or social isolation), but equally, early disruptive behaviour may contribute to deficits in higher-level cognition (e.g., reduced reading instruction due to classroom exclusion). Clear understanding of these relationships and the role that higher-level cognition plays in disruptive behaviour is crucial for informing the development of evidence-based prevention programmes and addressing societal impact of disruptive behaviour. Aim To understand the relationship between higher-level cognition and disruptive behaviour in typically developing children and young adults. Objectives 1. Using both standard and eye tracking assessments, assess disruptive behaviour and higher-level cognition (e.g., reading) and determine their relationship in a large sample of typically developing children and young adults.
2. Integrate the evidence from standard and eye-tracking methods to examine different aspects of higher-level cognition and their relative importance for disruptive behaviour.
3. Explore the bidirectional nature of the relationship between disruptive behaviour and higher-level cognition in children by; a) administering assessments across multiple points; and b) using an existing large-scale longitudinal dataset.

Methods Children and young adults will undertake a battery of assessments of different aspects of higher-level cognition (e.g., standard reading assessments, measures of eye movement behaviour during reading) and will complete standard assessments of disruptive behaviour (Objective 1, 2). To assess the potential bidirectional nature of the relationship (Objective 3), we will administer these assessments at multiple time points, and use a large-scale nationally representative longitudinal dataset that includes repeated measures of higher-level cognition and disruptive behaviour (e.g., Millenium Cohort Study).  Techniques that will be undertaken during the project:* Data collection with children and young adults
* Administration of tests assessing disruptive behaviour and higher-level cognition
* Eye tracking
* Secondary data management and analysis
* Complex statistical analyses using R, M*plus*

BBSRC Strategic Research Priority: Understanding the Rules of Life - Neuroscience and behaviour |
| **References** |
| Lichtenstein, P., Cederlöf, M., Lundström, S., D'Onofrio, B. M., Anckarsäter, H., Larsson, H. & Pettersson, E. (2020) Associations between conduct problems in childhood and adverse outcomes in emerging adulthood: a longitudinal Swedish nationwide twin cohort. *Journal of Child Psychology and Psychiatry*, 61(7), 798-806.  |