

## POPULAR ABSTRACT

### **The role of body movement for the development of visual attention in infancy - investigation with automatic movement quantification and dynamical systems methods.**

In everyday life, we continuously explore the environment around us. During this exploration, we voluntarily move our eyes from one location to another while we process all information present at these locations by keeping our eyes focused there. A fundamental challenge for the infant is to develop economical skills of attentional shifting that maximise the pick-up of relevant information. By learning to control their eye movements, infants' attention evolves from the first look given to his or her parents to the learning of various motor, cognitive and social skills, such as reaching and grabbing an object, responding to a smile, crawling and walking, and reading the first words.

Early on, infants engage their entire body in almost every action they perform. For example, one- month-olds shake their legs and arms and trunk to make it easier to shift their eye gaze from one object to another. In this case, infant eye motor development involves learning to move their eyes independently from other body parts to be capable of shifting infants' attention efficiently. This process is often referred as decoupling. In project, I propose that an early decoupling of eyes vs. other body movements influences infants' efficient visual strategies and therefore it will have important consequences in later cognitive development.

Therefore, I will be analysing already collected data from several longitudinal studies to look into the relation of eyes and body movements. I will extract movement using novel movement extraction methods and conduct advanced analyses to measure how well eye movements become independent from body movements and the consequences it has for developmental outcomes. These measures will be related to the measures of later child outcomes given by standardised tests as well as parental questionnaires.

This project has important implications for understanding these early mechanisms that act during the first months of life and how they shape individual long-term cognitive development, which is essential for understanding variability in outcomes across domains of cognition. The project will be also tested in a small group of infants at risk of autism and the results may provide some preliminary insights how we can support the development of infants with early motor difficulties so that they reach their full potential.