Project: The aim of this project is to identify the early cognitive, social and neural mechanisms that precede clinical onset of autism spectrum disorder (ASD) in a community sample. Our knowledge of early cognitive, social and neural mechanisms that precede the clinical onset of autism spectrum disorder (ASD) (e.g. Jones et al. 2014; Johnson et al., 2015) mostly comes from studies on infants at high familial risk for ASD. It is unclear whether and to which extent findings from studies of infants at high familial risk for ASD generalize to infants identified as high-risk from community samples (Szatmari et al. 2016). In particular it is unclear whether early social abnormalities in children identified from the community are associated with early biomarkers related to ASD as established in high-risk designs. This project will build on an ongoing new early detection and intervention project in The Netherlands.

Project aims are to: **1**) Identify children at low and high risk for ASD from a community sample; **2**) Comprehensively assess parent-child interaction (PCI) in these children, differentiate between child and parent contributions to this interaction (including measuring parental ASD traits and personality), and assess early cognitive, and neural markers of ASD; **3**) Examine the association between early abnormalities of social behaviour, early cognitive and neural markers of ASD, and outcome at 36 months.

Approach: **1**) We have implemented a comprehensive program where primary care providers and parents are primed and sensitized to early signs and symptoms of ASD through an online platform, e-learning, and expert consultation. This is incorporated in our health care surveillance system at well-baby offices where the child's developed is systematically monitored by the van Wiechenscheme (Laurent de Angulo et al. 2005). In case of any concern about ASD, the 14-item Communication and Social development Signals list (CoSoS, earlier called ESAT, Swinkels et al. 2006; Oosterling et al. 2010) will be administered that has shown to be sensitive to early signs of ASD in a population study at 14 months (Dietz et al. 2006). **2**) We classify children 14-20 months old into low risk and high-risk, collect EEG during social/nonsocial videos for theta power/connectivity measures, EEG during social interaction and EEG/ERP measures during task (face versus object processing), and auditory task with trains of tone to elicit gamma oscillations and measure habituation. We also use eye-tracking to measure saccade latencies in the GAP-attention task. Participants will be comprehensively phenotyped for cognitive, social and language development (Vineland, Mullen scales), early symptoms of ASD (ADOS toddler, SRS), sensory and sleep problems, and PCI using a newly developed and validated scheme (Pijl et al. 2018). **3**) We assess the outcome at 36 months using the BOSCC (Pijl et al. 2016), and dimensional scores for ASD symptoms at the SRS, and examine whether early social abnormalities are associated with similar early cognitive and neural markers of ASD (theta power/connectivity, face versus object contrast, gamma oscillations, GAP-task) as found in high-risk samples, and predict outcome at 36 months.

Context: The position is part of **SAPIENS**, a pan-European Marie Skłodowska-Curie Innovative Training Network (EU Horizon 2020 Programme) which aims to investigate how the dynamics of early social exchanges support the development of the social brain. SAPIENS combines advances in ecological, mobile real-time brain and behaviour measurement, data modelling and artificial intelligence approaches to train a new generation of researchers in implementing these ground-breaking approaches to early social development.

SAPIENS ITN offers 15 full-time Ph.D. positions as part of an innovative training programme in leading European institutions: Birkbeck, University of London (UK), Istituto Superiore Di Sanita (Italy), Karolinska Institutet (Sweden), King's College London (UK), Radboud University (Medical Centre) (the Netherlands), University of Cambridge (UK), Ghent University (Belgium), Utrecht University (the Netherlands), Uppsala University (Sweden), University of Warsaw (Poland) and one start-up, Harimata (Poland).