Abstract:

Autism spectrum disorder (ASD) is a heterogeneous neurodevelopmental syndrome characterized by a marked impairment in social interaction and communication, accompanied by narrow, repetitive and stereotyped patterns of behavior, interests and activities. Although not listed among basic diagnostic domains, motor system abnormalities have been consistently reported across the spectrum. These alterations are reported at several levels, spanning from basic motor deficits (i.e. clumsiness, alteration of balance and gait) to abnormalities in the organization and programming of complex motor behaviors.

The evaluation and characterization of motor disorders, as well as the consideration of a motor symptomatology not only referable to the basic symptoms, offer a new perspective on the ASD, highlighting the importance of considering motor disturbances from an etiological perspective. During the development of the child, alterations to the motor system are more easily and earlier identifiable than social deficits, and may not only serve as an early indicator of the disease, but also be useful for understanding some of the neurobiological mechanisms underlying this syndrome as well as for leading the choice of individualized rehabilitative pathways.

Hence the aim of our research is to investigate the presence of motor alterations in children with ASD compared to populations with typical development, and their impact on high-level social abilities such as action understanding and prediction.

Parallel, motor changes have been proposed as the basis of some cognitive-social deficits observed in individuals with ASD. Our studies assume that the connection between motor and social abilities can be due to the presence of the mirror mechanism that allows the transformation of sensory information related to an action, in an activation of the observer’s motor system. In line with this, previous studies from our group showed that the disability of ASD children in understanding observed actions correlates with deficits in the generation of one’s own motor planning and execution, in particular if specific motor bio-markers are considered.

Selected Publications


