Contribution ID: **513** Type: **Talk in simposio**

Mu Rhythm Modulation during Action Recognition in Williams Syndrome: A Window into Atypical Social Cognition

Saturday, September 13, 2025 9:35 AM (15 minutes)

Williams syndrome (WS) is a rare neurodevelopmental condition marked by cognitive delays and atypical social profiles. This study examined the neural mechanisms underpinning action prediction in WS through electroencephalographic (EEG) recordings of mu rhythm - a marker of sensorimotor simulation - during a probabilistic action prediction task. Participants included individuals with WS, an IQ-matched group with intellectual and developmental disabilities (IDD), and healthy controls (HC). All groups were assessed on their ability to use contextual cues to predict both human actions and non-biological shape movements during EEG recording.

Behaviorally, individuals with WS demonstrated preserved sensitivity to contextual probabilities, similarly to HC participants, consistent with previous findings of partially preserved use of contextual cues to predict social events. EEG analyses revealed that, in HC participants, mu event-related desynchronization (ERD) was modulated by both task type and cue probability, underscoring the engagement of sensorimotor simulation in action prediction. In WS, although mu ERD was attenuated, it was selectively modulated in trials with moderately informative cues, suggesting a non-typical yet context-sensitive neural response. In contrast, IDD participants showed neither behavioral nor neural modulation, alongside globally attenuated mu suppression. The findings highlight both shared and distinct neural dynamics in WS and HC, and shed light on the mechanisms supporting action understanding in atypical development. By combining behavioral and neural data, this study offers new insights into the neurocognitive architecture of social cognition in WS and underscores the value of mu rhythm as a window into social processing in atypical development.

If you're submitting a symposium talk, what's the symposium title?

Comprendere la mente degli altri: evidenze comportamentali, cliniche e neuroscientifiche

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No

Primary author: OLDRATI, Viola (Istituto Scientifico IRCCS E. Medea)

Co-authors: Dr BUTTI, Niccolò (Istituto Scientifico IRCCS E. Medea); Dr FERRARI, Elisabetta (Istituto Scientifico IRCCS E. Medea); PIAZZA, Caterina (Istituto Scientifico IRCCS E. Medea); Dr GAGLIARDI, Chiara (SPAEE, Università Cattolica di Milano); Dr ROMANIELLO, Romina (Fondazione Mondino IRCCS); Dr FINISGUERRA, Alessandra (Istituto Scientifico IRCCS E. Medea); Prof. URGESI, Cosimo (Università di Udine)

Presenter: OLDRATI, Viola (Istituto Scientifico IRCCS E. Medea)

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