

Giving meaning to the social world in autism spectrum disorders: Olfaction as a missing piece of the puzzle?

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Human olfaction constitutes a valuable mean to communicate and obtain information about the opportunities and threats present in the environment. Olfactory cues can influence how we think, feel, and behave in an effortless and subliminal way, and have been suggested to play a significant role in social communication. For instance, the chemosignals present in human body odor can communicate crucial information about their sender, such as the emotional state, which has been suggested to modulate social interaction. Moreover, odors interact with information from other senses to provide a better understanding and response to social demands. The role of olfaction in visual processing has been particularly explored, by showing that both social and non-social odors influence face perception and emotional processing, for instance. Notwithstanding the role of olfaction in how we make sense of the world, this sensory system is still underexplored, even in conditions where social cognition is altered – as it

is the case of Autism Spectrum Disorder (ASD). This neurodevelopmental condition is characterized by atypical social interaction and communication, as well as by restricted and repetitive patterns of behavior and interests. Importantly, decreased social attention, atypical face processing and difficulties in emotional processing have been reported across the spectrum. However, these difficulties have been explored in a unimodal perspective, mainly considering the visual system. Since olfaction can be an important mean to provide socioemotional information, it could be a potential mitigator of social and emotional difficulties in ASD. Yet, studies underlying olfactory processing in ASD are still scarce and inconsistent. In this work, we reviewed and discussed the role of olfaction in social cognition, and how studying this sensory system may be relevant for ASD, especially considering the observed difficulties in sensory and social processing, as well as in social behavior.

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FIGURE 1

Example of the experimental setting of a task with social visual and olfactory stimuli. While the participant is exposed to an olfactory stimulus, facial emotion expressions are presented, one at a time. The objective is to understand if an olfactory cue facilitates the processing of visual social stimuli (e.g., observed through an increase in response speed of emotional categorization).

