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Title   Empathy matters for social language processing: ERP evidence from individuals with and without autism spectrum disorder

Text   When a young girl claims that she cannot sleep without her teddy bear, hardly anybody will look surprised. However, when an adult man says the same thing, this is bound to raise some eyebrows. A previous ERP study revealed that individual differences in empathizing affects integration of this type of extra-linguistic, social, information in a linguistic context. The present ERP study tested individuals with autism spectrum disorder (ASD) to investigate verbal social information processing in a clinical population that is impaired in social interaction.

Twenty adult males diagnosed with ASD (verbal IQ > 100), 22 healthy men and 12 healthy women participated. Experimental materials consisted of sentences with a lexical content that either did or did not fit probabilistic inferences about the speaker's sex, age, and social-economic status, as could be inferred from the speaker's voice. Examples of speaker identity incongruent utterances are "Before I leave I always check whether my make up is still in place", in a male voice, "Every evening I drink some wine before I go to sleep" in a young child's voice, and "I have a large tattoo on my back" spoken in an "upper-class" accent. In addition, we included a pure linguistic, lexical semantic manipulation (e. g., "You wash your hands with soap/horse and water"). Participants indicated after each spoken sentence, using a five-point scale, how odd they thought the sentence was, while their EEG was recorded. They also filled out a questionnaire on their empathizing ability.

Our results reveal that empathy matters for verbal social information processing, but not for lexical semantic processing. Behavioral results show that individuals who scored low on empathizing ability had more difficulties detecting violations of speaker and message. At the neuronal level, individuals who empathize to a lesser degree showed a delayed onset of, as well as a smaller, positive ERP effect, which can be related to decision-making processes. We conclude that high-functioning individuals with ASD, who demonstrate low empathizing abilities, do not experience problems in pure linguistic processing, but that they do have difficulties with assigning value to social information in language processing.

Theme   F - Cognition and behaviour
Human cognition and behaviour - Social cognition