Non-verbal communication patterns of typically developing children, children with autism and children at high risk for autism in a gesture elicitation interactive task

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Abstract

Research on early communication skills shows that gesture production is a strong predictor of language in typical development. However, the well documented gesture-language relation in typical communicative development (TD) largely remains understudied in Autism Spectrum Disorder (ASD). Deficits in gesture use are part of the diagnostic criteria of Autism Spectrum Disorder in DSM-5. Yet, despite the vast amount of evidence showing that children with autism produce fewer gestures than typically developing children, little is known about the specific differences between the gesture patterns of children on the spectrum and typically developing children. The few studies exploring these have used naturalistic observations during free play interactions (Mastrogiuseppe, Capirci, Cuva & Venuti 2015; LeBarton & Iverson, 2016). Despite the ecological validity of such designs, objective across-groups comparisons might be hampered by the lack of controlled experimental conditions. The aim of the present study is to provide an exhaustive description of the gesture production patterns in autism. Our improved methodology included a semi-naturalistic paradigm and a set of quantitative (gesture counts) and qualitative measures (gesture types) based on a novel hand-configuration gesture classification approach. Participants (age range=1-6 years old) with ASD (n=16), at high risk for autism (n=13) and typically developing children (n=18) performed a gesture elicitation task in which they were videotaped while interacting with a caregiver. Each gesture and object manipulation instances were coded offline with the linguistic annotator ELAN.

Our focus in the analyses was on deictic gestures identified as the combination of two features, hand shape [±index finger] and [±contact with referent]. We found significant group differences in the production of both gestures with index finger, and on whether those gestures featured contact with the referent or not. Furthermore, significant differences were found between the children with autism and the typically developing group, but not between the
children with autism and the high-risk group or the high-risk group and the typically developing children on gestures produced with an extended index finger. A significant difference in the presence of the feature [±contact with referent] was also found between the children with autism and the typically developing group. The difference between the autism group and the high-risk group failed to reach significance, while for the high-risk and typical children a trend towards significance was observed. These results confirm that there are not only quantitative, but also qualitative differences in gesture production by children on the autism spectrum. The current study also suggests that children at risk for autism pattern together with children who already have a diagnosis (presence of contact with referent), while in other respects are similar to typically developing children, thus forming an intermediate group. The current study thus contributes to further describing gesture production in typical development and identifies autism-specific gesture features. This has the potential to categorize autism-markers and add to the behavioural characterization of the condition.