

## **Spontaneous use of referring expressions by children with autism spectrum disorder during computer games with a function of Enforced Collaboration**

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Appropriate use of referring expressions requires knowledge of the linguistic meanings of these forms and the ability to make assumptions about the addressee's focus of attention (mental state) in relation to the intended referent. For that reason, referential communication has been extensively studied in children with Autism Spectrum Disorder (ASD) (Arnold et al., 2009; Dahlgren & Sandberg, 2008). However, these studies mainly used referential communication structured tasks to elicit referring expressions. The purpose of the present study was to examine the spontaneous referential choices made by high-functioning children with ASD and typically developing (TD) control group during computer games with a function of Enforced Collaboration (EC). It is well known that computer games stimulate interest and motivation among children with autism (Piper et al., 2006). Moreover, computer games with an EC function that posit an active involvement of players and foster collaboration between pairs of children towards the achievement of a common goal, were found to be effective in encouraging social interaction and the development of social competence (Bauminger-Zviely et al., 2013).

Participants in the current study included 16 children with high-functioning ASD and 16 TD children aged 5-8 years and matched by age, linguistic and cognitive abilities. Pairs of children played two different computer games during three separate sessions, using the Join In Suite program with an EC function: the Bridge game which requires cooperation of the sharing type, and the Alien game which requires cooperation through collaborative planning. Video recordings of all sessions (total of 96 interactions) were made with two cameras simultaneously, one recording the children's faces and one recording the computer screen. This allowed the capture of both verbal and non-verbal information in relation to what occurred during the games. All videotapes were transcribed with each line corresponding to an utterance, defined as a spoken segment by a particular speaker with boundaries based on intonation contour. Referring expressions were identified and coded on the basis of both function and form. Function classification included informative, uninformative and redundant referents. Form classification was defined by the part of speech of the referent including explicit referents (nouns), underspecified referents (deixis) and zeros (no referent encoded).

In contrast to previous studies, no differences were found between the ASD and TD groups on most of the measures of referential communication. Children with ASD

produced mostly informative referents. Their use of redundant and uninformative referents was slightly higher than that of the TD children. There was an increase in the use of referring expressions from the first to the last sessions, indicating that communication became more effective as children became more familiar with the games. We conclude that at least part of the success of children with ASD to use referring expressions appropriately may be attributed to the computerized setting with an Enforced Collaboration function.

### References

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