Mental state terms and the role of working memory in high functioning autistic children's story generation from picture-stories

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Introduction

- Narrative abilities of children with high functioning autism (HFA)
  - disparate language behaviour mainly in semantic and pragmatic language use (Klin, Sparrow, & Volkmar, 2000; Tager-Flusberg, 2000)
  - pragmatically-inappropriate use of referential expressions in the Introduction and Reintroduction of Character Reference (Peristeri & Tsimpili, 2013)
- Theoretical accounts of narrative performance in HFA
  - Weak Central Coherence account: problems in narrative performance attributed to reduced ability of children with HFA to invest sentences with global meaning (Jolliffe & Baron-Cohen, 1999; Booth & Happé, 2010)
  - Theory of Mind (ToM) deficits: a tendency to disregard the needs of others in structuring discourse (Happé, 1994; Tager-Flusberg, 1999)
  - Executive functions (EF): a complex set of higher-order cognitive processes that involve set-shifting, inhibition, working memory (WM), planning, and organization (Luria, 1980; Riccio et al., 2010; Troyb et al., 2013). Findings regarding WM performance in children with autism are inconsistent (WM deficit reported in Griffith et al., 1999; Eigsti, 2013; Bennett et al., 1996; Russell et al., 1996). In a recent study with children with HFA no significant correlation was observed between verbal WM and narrative performance (Peristeri & Tsimpili, 2013).

Research questions

1) Are there differences between children with HFA and TD children with respect to their narrative competence, especially in terms of lexical diversity and syntactic complexity?

2) Is there a verbal WM deficit in HFA?

   - yes

   - no

   - other

   - uncertain

Methods & Materials

- Narrative elicitation tasks
  - Four picture stories: Edmonton Narrative Norms Instrument (ENNI; Schneider, Dubé, & Hayward, 2005)
  - Two children’s picture books: Harry the dirty dog" and “Peter’s chair” (Keats, 1967)
- WM Measure
  - Backward Digit Span (Wechsler Intelligence Scale for Children; Wechsler, 1991).

Procedure

- Participants had to generate the stories based on the pictures they saw.
- Story-retelling was elicited a week later with story-picture presentation.

Focus of present study: retelling data

1) Data analyses
   - Length measures:
     - number of words
     - number of clauses
     - number of T-units
   - Lexical diversity:
     - affective mental state terms (e.g., happy, sad, feel)
     - cognitive terms (e.g., think, remember, know)
   - Syntactic complexity
     - clauses per T-unit divided into subordinate and coordinate clauses

Subjects

- Young group: 10 children with HFA; age range: 7;2- 9;5, Mean age: 8;4
- Old group: 13 children with HFA; age range: 10;1-12;6, Mean age:10;9
- 23 age- and vocabulary-matched controls

Results

- Use (%) of cognitive vs. affective mental state terms in retelling

Summary

- Narrative production and mental state terms

Children with HFA

- no increase in the use of affective mental state terms with age.

TD children

- increase in the use of affective mental terms with age
  - no between-group differences in the use of cognitive mental state terms across age groups

Results on Working memory

- children with HFA showed higher verbal WM capacity with respect to TD controls
- such cognitive advantage did not seem to affect narrative length or syntactic complexity in HFA children

Conclusions

- affective mental state terms developmentally differ from cognitive terms in children with HFA.
- WM advantage in children with HFA does not interact with quantitative (length) and qualitative (syntactic complexity) properties of narrative production

Selected References


References