Semantic coordination of speech and gesture in young children

CogSci'19, Montreal

Olga Abramov , Ulrich J. Mertens, Katharina J. Rohlfing, Friederike Kern, Anne Nemeth and Stefan Kopp

Introduction

Spoken language and co-speech iconic gestures underlie the same cognitive representations [1] and are systematically organized in relation to one another, but do not necessarily expressing identical aspects [2]. Thus, both modalities together convey the full meaning of the speaker's cognitive representations [1]. Holler and Beattie [3] argue, however, that speech and gesture are more flexibly integrated, depending on the communicative intention of the speaker and they hypothesize that **semantic features (SF) in gesture and speech vary according to communicative demands.**

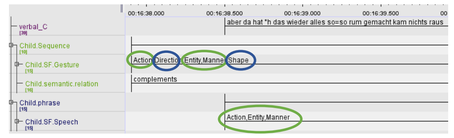
Here, we pose the following questions:

- **How are semantic features distributed in children's speech and gesture?**
- **How does the distribution vary with different communicational demands?**
- **How are children's cognitive skills related to the use of semantic features in speech and gesture?**

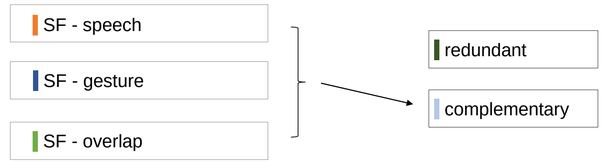
Procedure

Preschool children (n = 40) from Germany at the age of 4 participated in our study. During the first session children completed three different communicative tasks. At the second session they completed the non-verbal Intelligence Test SON-R 2.5 - 7.

Coding



.Example: "*but he did it this way and nothing came out* "



Semantic features (SF) in iconic gesture and speech

Entity – Manner – Property - Relative position
Action – Direction – Shape – Amount – Others
(Bergmann & Kopp 2006)

Method

Communicative Tasks

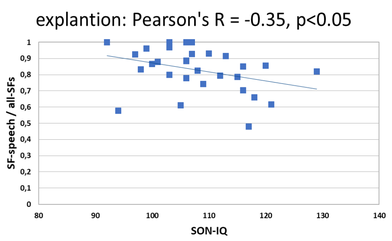
- Retelling
- Explanation
- Report

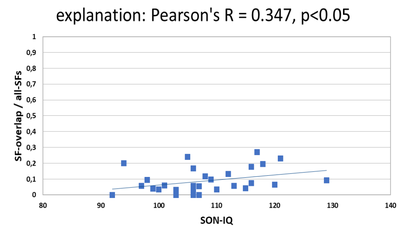
Intelligence Test

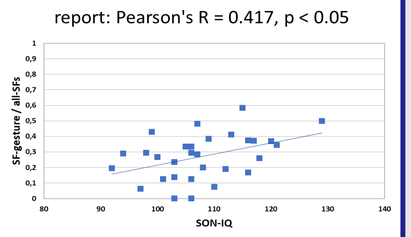
- SON-R
  - Reasoning
    - Categories
    - Analogies
    - Situations
  - Spatial
    - Mosaics
    - Puzzle
    - Patterns

Results

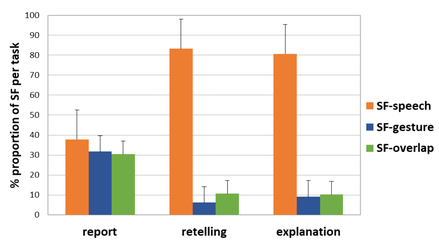
cognitive skills and SF



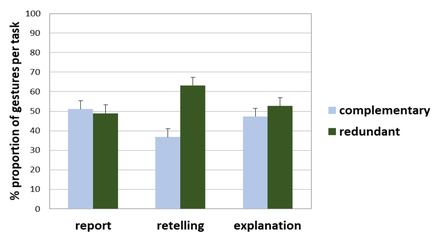




SF in speech and gesture



complementary vs. redundant



References

[1] McNeill, David (1992). Hand and Mind: What Gestures reveal about thought. University of Chicago Press. [2] McNeill and Duncan, "Growth points in thinking for speaking," in Language and gesture, D. McNeill, Ed. Cambridge, UK: Cambridge University Press, 2000, pp. 141–161 [3] Holler, Judith & Beattie, Geoffrey. (2003). How iconic gestures and speech interact in the representation of meaning: Are both aspects really integral to the process? Semiotica 146. 81-116; [4] Bergmann, Kirsten & Kopp, Stefan. (2006). Verbal or visual? How information is distributed across speech and gesture in spatial dialog.