



Faculty of Humanities



# The role of general cognitive abilities in the relationship between language- specific structure and substance

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# Language and Cognition – Perspectives from Impairment



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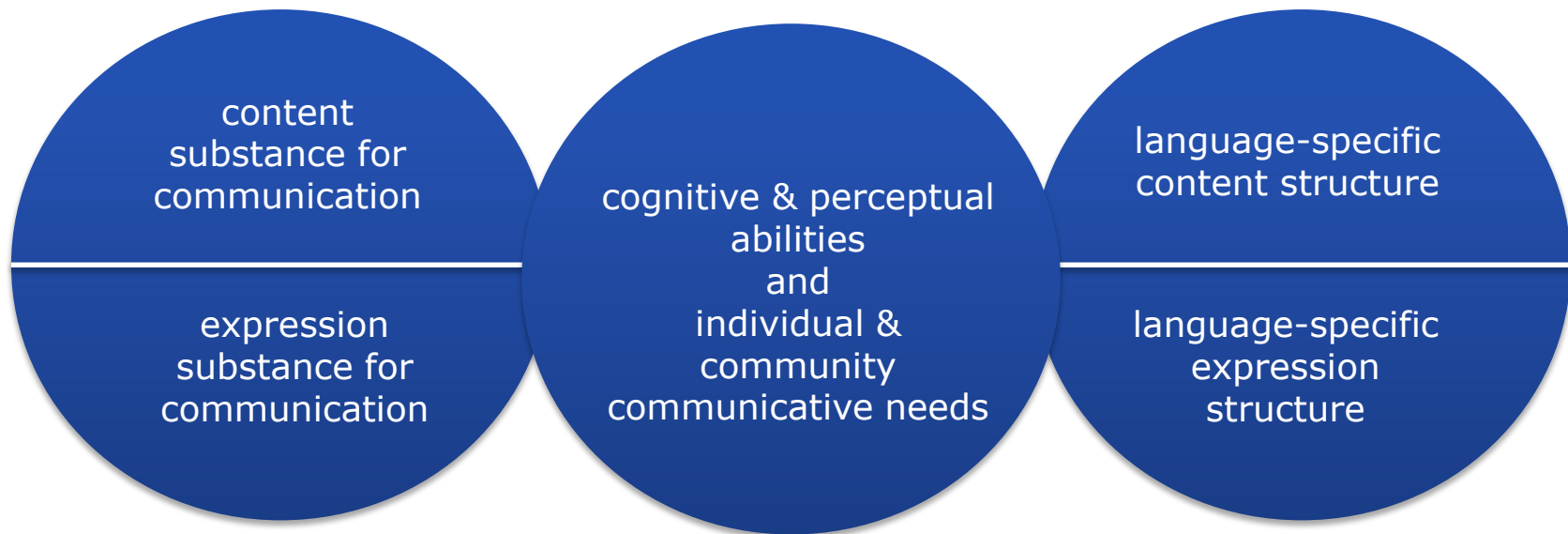
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Harder, P. (1996). *Functional semantics: a theory of meaning, structure and tense in English*. Berlin, Germany: Mouton de Gruyter.

Hjelmslev, Louis (1953[1943]). *Prolegomena to a Theory of Language*. Baltimore: Indiana University Publications in Anthropology and Linguistics (IJAL Memoir, 7).



## Appeal to general cognitive abilities

'Perhaps the most fundamental methodological principle I follow is to look for *converging evidence* from multiple sources.'

(Langacker 1999: 26)

'First, particular descriptive constructs (e.g. profiling...) are shown to be necessary for the adequate semantic description of multiple phenomena in various languages. Second, it is argued that these constructs are commensurate with (if not identical to)

**independently observable cognitive abilities**. Third, it is demonstrated that the same constructs—psychologically natural and semantically necessary—are critical for the explicit characterization of varied grammatical phenomena.'

(Langacker 1999: 26-27 – my emphasis)

Profiling: 'a kind of focusing of attention' (Langacker 1999: 28)

Langacker, R. W. (1999). Assessing the cognitive linguistic enterprise. In T. Janssen & G. Redeker (Eds.), *Cognitive Linguistics: foundations, scope, and methodology* (pp. 13-59). Berlin, Germany: De Gruyter Mouton.



# Autism Spectrum Disorder

A developmental disorder that affects specifically social-emotional reciprocity

Reduced propensity to grasp other people's understanding of a situation, i.e., to mentalize



## Hypothesis

Individuals with autism will have specific problems with those aspects of language whose semantic structure include attribution of propositional content to “minds” or attribution of a particular perspective to “minds”.

For example:

- speech reports
  - *He said that it should come back*
- complement clauses of cognitive verbs and verbs of volition
  - *He thought it would come back*
  - *He wants it to come back*
- causal clauses giving reasons for emotions
  - *He was sad because it didn't want to come back*
- complement clauses of verbs of perception
  - *He saw that it came back*
- in Danish, also dialogue particles



## Participants

27 children with autism (ASD), 23 male

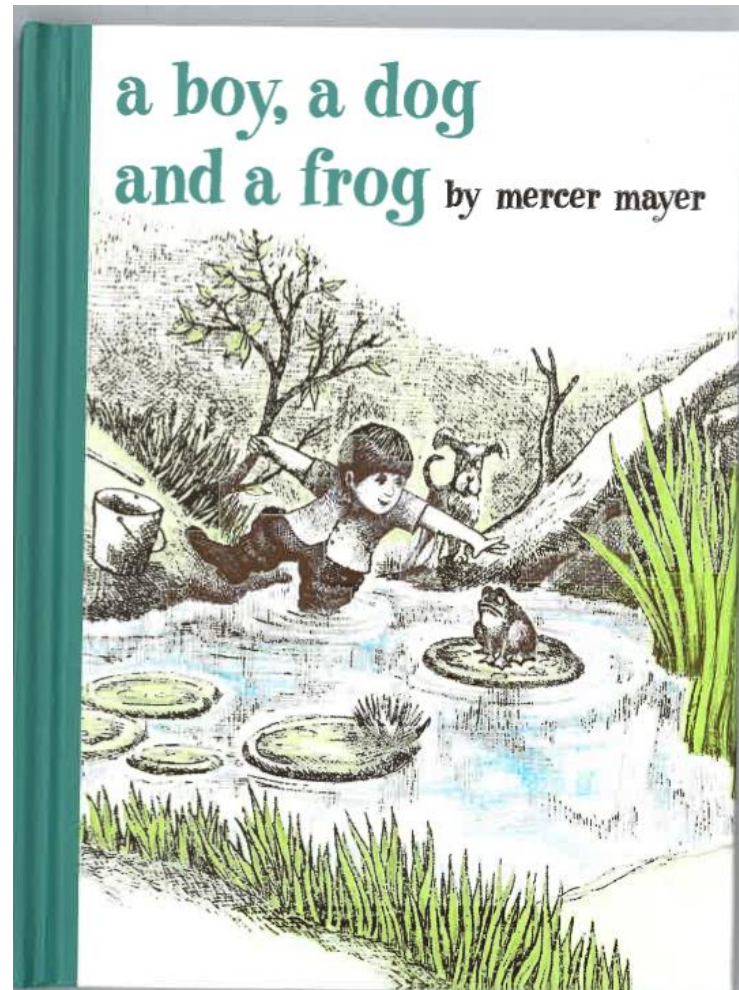
30 typically developing children (TD), 16 male

do not differ significantly on

- chronological age (10;6-13;6)
- nonverbal cognitive ability (Matrices/WNV)
- vocabulary comprehension (Danish version of PPVT)
- grammar comprehension (TROG-2)



Mercer Mayer. 1967. *A boy, a dog and a frog.*





# Non-propositional vs. propositional expression and public vs. non-public

## Public

- Communication
  - *drengen råber af frøen* 'the boy is shouting at the frog'
  - *og han råber til frøen at den skal komme tilbage* 'and he shouts to the frog that it must come back'

## Non-public

- Perception
  - *pludselig får han øje på en frø* 'suddenly he catches sights of a frog'
  - *så ser han der er nogle fodspor* 'then he sees that there are some footprints'
- Emotions
  - *han blev gal på frøen* 'he got mad at the frog'
  - *han var glad for at se drengen og hunden* 'he was pleased to see the boy and the dog'
- Thoughts and intentions
  - *de skal ud at fange fisk* 'they are going fishing' (in Danish with a modal verb)
  - *så gør de sig klar til at fange den* 'then they get ready for catching it'



## Public or non-public?

TD: *han vil række ud for at fange frøen for han vil jo gerne have frøen fange frøen ja, men frøen den hoppede bare væk* – 'he is about to reach out to catch the frog for he wants the frog catch the frog yes, but the frog just jumped away'

ASD: *han siger 'kom så her' {fast, in an angry voice}, men frøen siger 'kvæk'. Drengen siger 'oj' – 'he says 'do come here' {fast, in an angry voice}, but the frog says 'croak'. The boy says 'oj''*



## Results

Communication index:

- number of propositional communication reports/total number of propositional expressions of communication + perception + emotion + thoughts and intentions for each child

ASD (mean 0.49) – TD (mean 0.27):  $z = -2.08$ ,  $p = 0.04$

Children with autism are more likely than typically developing children to report story characters' mental activity as communication rather than as non-public mental activities.

A semantic – not a grammatical – distinction



## Index of direct speech

For each child: the total number of direct speech reports divided by the total number of propositional communication reports (direct speech, indirect speech, causative constructions)

ASD mean: 0.45

TD mean: 0.14

Group	Direct only	Indirect only	Both	Total
ASD	7	9	3	19
TD	2	19	3	24

Fisher Exact Test:  $p = 0.05$

Children with autism prefer direct to indirect ways of expressing communication to a greater extent than typically developing children.



## Direct vs. indirect speech

Direct speech:

*så råber drengen og frøen "vi kommer tilbage næste gang" –  
'then the boy and the frog shout "we'll come back next time"*

Indirect speech:

*så står drengen inde ved bredden og råber af frøen at hn- han  
kommer tilbage tror jeg nok –*

'then the boy is standing on the shore and shouting at the frog  
that h- he will be back I think'

Direct speech: one perspective

Indirect speech: two perspectives interwoven



## Mixed perspective in Danish dialogue particles

### Particles

- monosyllabic words
  - never take stress
  - never obligatory
  - can't be inflected
  - usually in the middle of the clause
- They are easily overlooked.

Quite complex meanings of perspective mixing.



## *jo – da – vel*

- jo*      Shared knowledge, presupposed agreement  
“you know and I know, and we agree”
- da*      Shared knowledge, opposing viewpoints  
“you know and I know, but you (or somebody else)  
appear to disagree”
- vel*      Speaker uncertainty, privileged other knowledge  
“I believe, but you (or somebody else) probably know  
better”

Davidsen-Nielsen, N. (1996). Discourse particles in Danish. In E. Engberg-Pedersen, M. Fortescue, P. Harder, L. Heltoft & L. F. Jakobsen (Eds.), *Content, expression and structure: studies in Danish functional grammar* (pp. 283-314). Amsterdam, The Netherlands: John Benjamins Publishing Company.

Boeg Thomsen, D. (2012). *Viet til vinkler, viernes vinkler: typisk udviklede danske børns beherskelse af synsvinkelmarkerende diskurspartikler*. (Kandidatspeciale), København, Danmark.



# Gap-filling test – JDV-test

*jo da vel*

8) "Julie and Signe are good friends. They have planned to go to the swimming bath. Then Julie falls ill. She calls Signe and cancels the appointment. Signe says: You'll \_\_\_\_\_ get well before Saturday. So we can just go then."

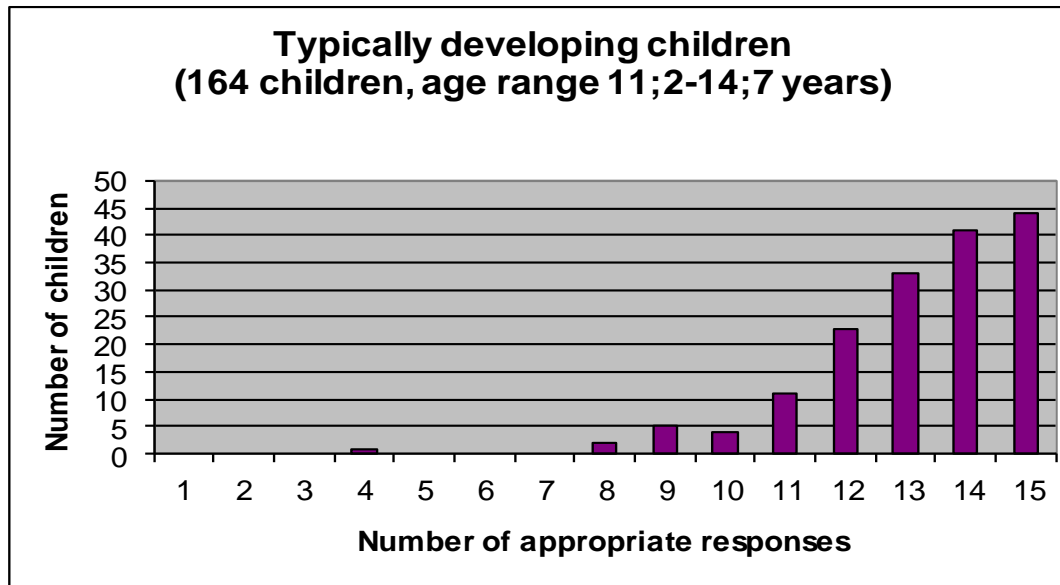
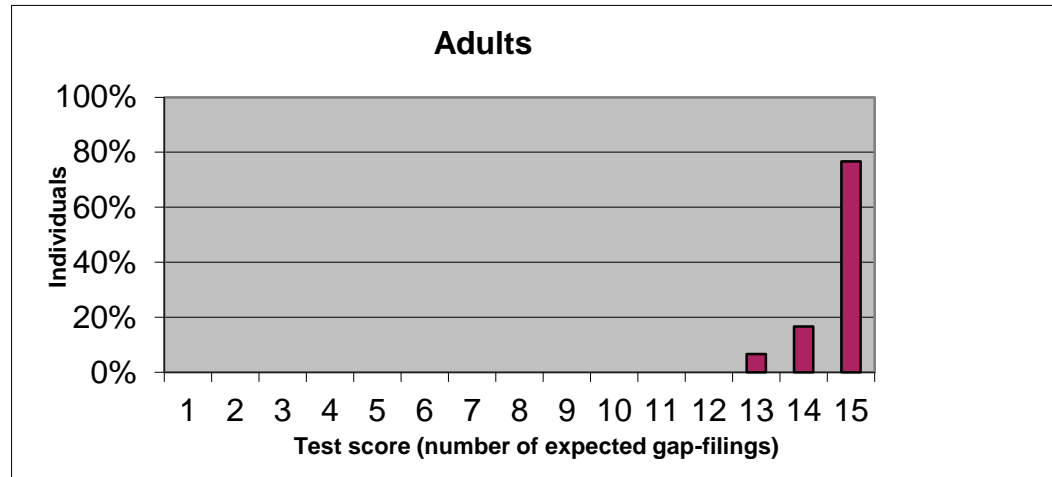


*Vel* context

Speaker uncertainty: future, other person's health  
Privileged recipient knowledge: a sick person knows more about her illness and chances of getting well than a friend does.



Piloted on 60 adults and tested on 164 children  
11;2-14;7 by Ditte Boeg Thomsen (2012)



## Children with autism

26 children with autism (ASD), 22 male

29 typically developing children (TD), 16 male

Did not differ significantly on

- chronological age (10;6-13;6)
- nonverbal cognitive ability (Matrices/WNV)
- vocabulary comprehension (PPVT)
- grammar comprehension (TROG-2)
- reading decoding skills

Engberg-Pedersen, Elisabeth, & Boeg Thomsen, Ditte. (In press). The socio-cognitive foundation of Danish perspective-mixing dialogue particles. In B. Dancygier, W.-I. Lu & A. Verhagen (Eds.), *Linguistic manifestations of mixed points of view in narratives*. Berlin, Germany: de Gruyter Mouton.



## JDV-test

As a group, the children with autism did not choose the most appropriate dialogue particle for each story as often as the typically developing children.

ASD compared with TD:  $t(40.89) = 3.35, p < 0.005$

Correlation with grammar comprehension:

ASD:  $r = 0.65, p = 0.0002$

TD:  $r = 0.52, p = 0.004$

Dialogue particles are 'by convention discursively secondary' and thus grammatical (Boye & Harder 2012: 13).

Correlation with test for nonverbal cognitive ability:

ASD:  $r = 0.45, p = .02$

TD:  $r = 0.12, p = ns$

Children with autism possibly use different strategies to figure out the meaning of the dialogue particles.

Boye, K., & Harder, P. (2012). A usage-based theory of grammatical status and grammaticalization. *Language*, 88(1), 1-44.



## Conclusions

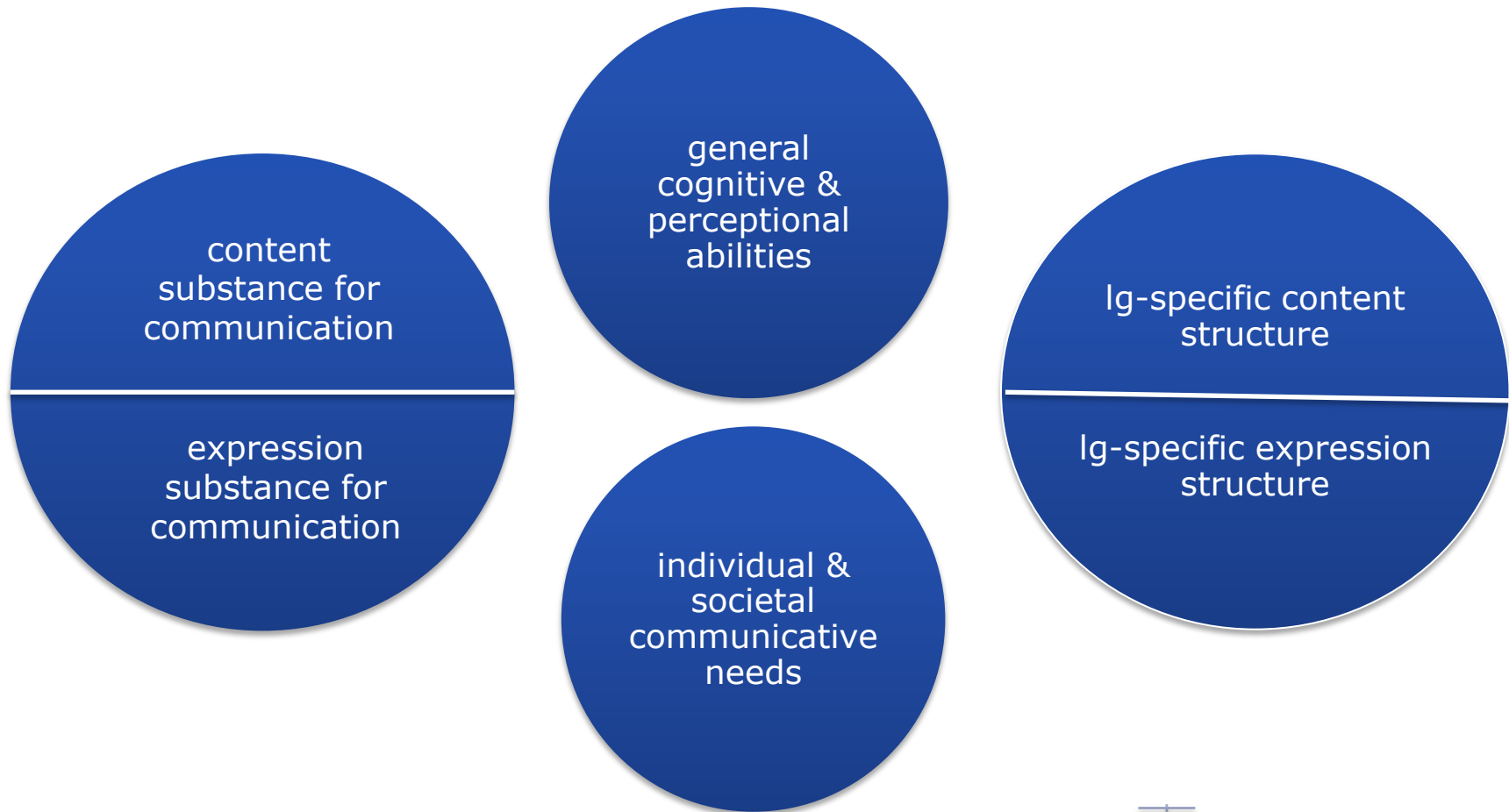
As predicted by the semantic analyses and the cognitive characteristics of autism spectrum disorder, children with autism

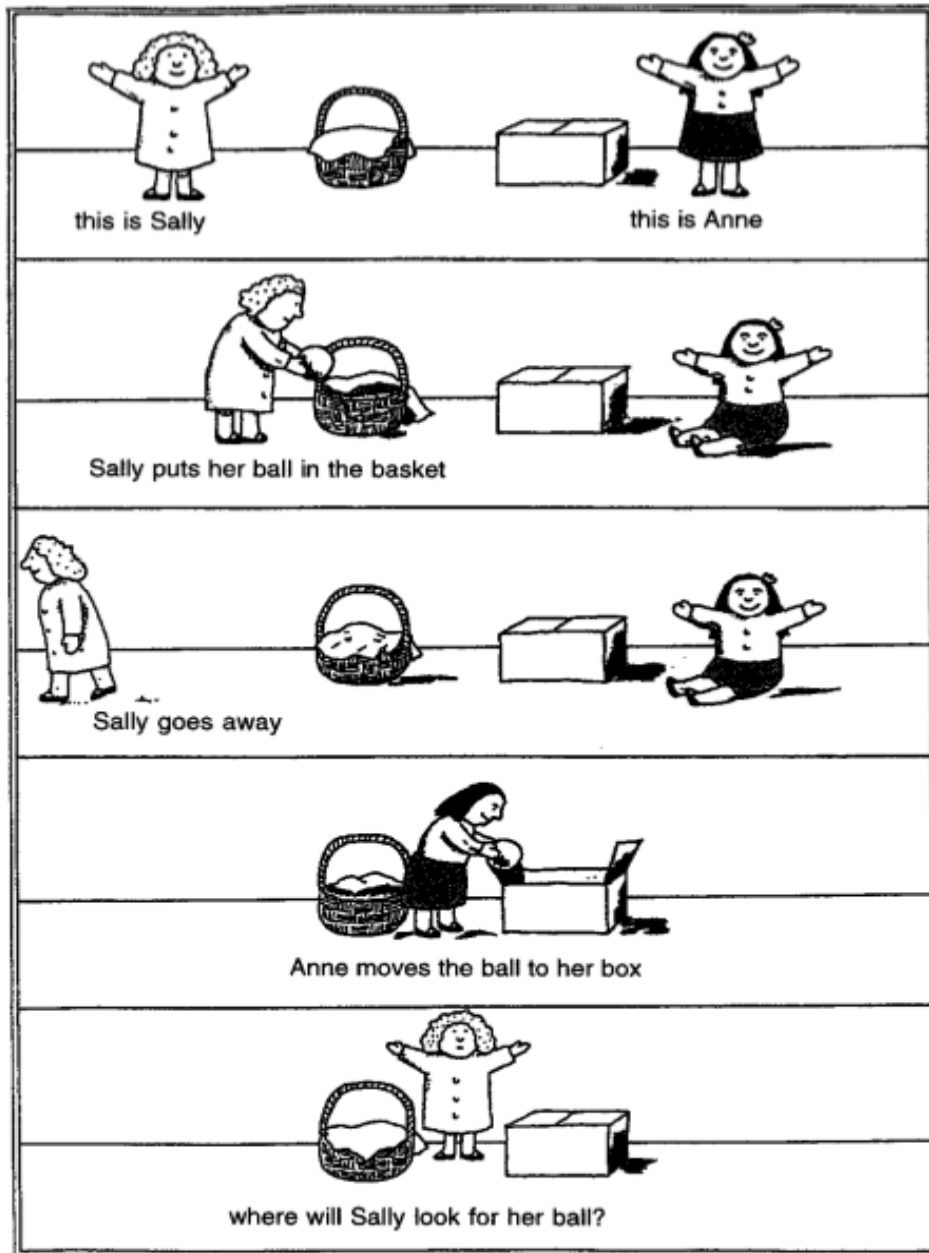
- spontaneously prefer monoperspectival direct speech to biperspectival indirect speech to a greater extent than typically developing children
- do not choose the most appropriate biperspectival dialogue particles in context with the same ease as typically developing children.

The results give independent cognitive evidence for the semantic analyses and throw light on the role of cognitive abilities in the relationship between language-specific structure and substance.









From Frith, Chris D., & Uta Frith.  
1999. Interacting minds: a biological  
basis. *Science* 286, 1692-1695.

