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Overgeneration of Indefinite Articles in Autism and SLI

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Abstract

This study investigates the question as to whether SLI and Autism have overlapping etiologies (cf. Bishop, 2003; 2010) or not. We report experimental data on the choice between a definite and an indefinite article by Dutch-speaking children with High Functioning Autism (HFA) and children with Specific Language Impairment (SLI). Our results show that subgroups of both children with HFA and children with SLI overgenerate the indefinite article *a* in definite contexts. However, despite the HFA - SLI resemblance in terms of article choice, their profiles differ regarding grammar and cognition, suggesting distinct etiologies. We propose that in the HFA group overgeneration of *a* is due to the lack of Grice's (1975) Maxim of Quantity, whereas in the SLI group it is due to impaired Working Memory (WM).

Theoretical background

Article choice depends on speaker/hearer assumptions → part of **pragmatics**:

	Referent assumed to exist by	Article
A: Definite (referential)	speaker and hearer	<i>de/het</i> (the)
B: Indefinite (referential)	speaker only	<i>een</i> (a)
C: Indefinite (non-referential)	Neither speaker nor hearer	<i>een</i> (a)

Schaeffer & Matthewson (2005)

• Concept of Non-Shared Assumptions (CNSA):

Speaker and hearer assumptions are always independent. Young children lack CNSA → TD children sometimes attribute their own assumptions to hearer → *the* instead of *a* (in B-context) in **production** (Schaeffer & Matthewson, 2005).

• Maxim of Quantity (Grice, 1975):

Be as informative as required/necessary

Definiteness Scale: (Horn, 2006): <a, the>

Scalar implicature: choice of weaker term *a* suggests that stronger term *the* does not hold. Young TD children fail to draw scalar implicatures → *a* can refer to referent known to both speaker and hearer (A-context) in **comprehension** (Van Hout et al., 2010).

Hypotheses

H₀ Children with HFA and children with SLI have overlapping etiologies and therefore perform similarly on Article Choice.

H₁ Children with HFA and children with SLI have different etiologies and therefore perform differently on Article Choice:

- Children with HFA have impaired pragmatics, and therefore lack CNSA and/or Maxim of Quantity
- Children with SLI do not have impaired pragmatics, and therefore do not lack CNSA or Maxim of Quantity

Predictions

H₀ Children with HFA and children with SLI make similar errors, or no errors at all on Article Choice in production

H₁ - Children with HFA overuse *the* in B-contexts and *a* in A-contexts
- Children with SLI do not overuse *the* and *a*

Methods

Participants

	N	Age range (mean)
HFA	28	5 – 14 (10;0)
SLI	28	6 – 14 (9;8)
TD	28	6 – 14 (10;0)

Methods

Materials and procedure

- Elicited Production Task
- Two experimenters, one of them (Exp. 2) cannot see computer screen and asks questions

Condition	Number of items
Definite	6
Indefinite referential	6
Indefinite non-referential	6



Definite

Exp 2: Hey, who do you see in the picture?
Participant: *Name*

Exp 2: What else do you see?
Participant: A ball



Movie of puppet rolling the ball

Exp 2: What did *name* do?

Target: She rolled **the** ball



Indefinite referential

Exp 2: Hey, who do you see in the picture?
Participant: Dora!

Exp 2: And what did Dora just do?

Target: She drew **a** heart



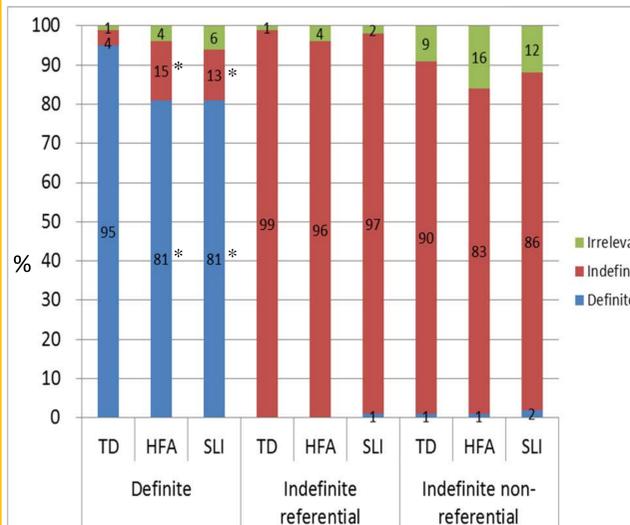
Indefinite non-referential

Exp 2: Hey, who do you see in the picture?
Participant: Big Bird!

Exp 1: Big Bird says: "Oh, I am so bored, I don't know what to do. Oh, you know what? I'll go to the forest and draw something!"
Exp 2: What do you think Big Bird is going to do?

Target: He is going to draw **a** tree.

Results



Percentage of definite, indefinite and irrelevant responses per condition per group

Discussion

• Neither SLI nor HFA group overuses *the*

→ Like children with SLI, children with HFA do NOT lack CNSA. Corroborated by ToM scores (no significant differences between groups, $p = .19$).

• Both SLI and HFA group overuse *a*

→ Resemblance SLI – HFA, so support for Overlapping Etiologies Hypothesis? No!

Discussion – cont'd

Grammatical and cognitive profiles HFA and SLI

	CELF	Mass-Count	Subj-Verb Agr.	WM
HFA	54%*	88%	95%	4.2
SLI	8%**	78%**	83%**	3.5**
TD	73%	93%	96%	4.8

SLI: * = significantly worse than and TD (** = and HFA)
HFA: * = significantly worse than TD

Group patterns reflected in individual analysis

Article Choice	N	CELF	Mass-Count	Subj-V Agr.	WM
HFA failers	6	55%*	90%	95%	4.0
SLI failers	4	9%*	79%*	91%*	3.0*
TD	26	72%	92%	96%	4.8

* = significantly worse than TD

HFA failers: Lack of Maxim of Quantity.

Surian, Baron-Cohen & van der Lely (1996):

Children with ASD perform significantly worse than TD (and SLI!) on Gricean Maxims.

SLI failers: Vulnerable WM causes difficulty to calculate scalar implicature (too much to hold in WM)?

Conclusion

- Lack of *the* overuse: no evidence for lack of CNSA in either SLI or HFA group.
- a* overuse in HFA: Lack of Maxim of Quantity
- a* overuse in SLI: Failure to calculate scalar implicature due to vulnerable WM.
- Different profiles in terms of grammar and cognition suggest distinct etiologies for HFA article choice failers and SLI article choice failers.

Future research

Test simple scalar implicature (without high load for WM). Predictions:

- Children with HFA perform badly (lack of MoQ)
- Children with SLI perform well (no WM issues)

References

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