

Focus affected quantification in adult and child language

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Semantics in the Netherlands Day 2006 - Utrecht



or

The existence of Westerståhl children

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Outline

- Many
 - Many's ambiguity and the 'switched reading'
 - Focus affected quantification (Herburger, 1997, 2001)
- The acquisition of quantification
- Experiment
 - Research question
 - Predictions
 - Method
 - Results
- Conclusions

Starting point

- All quantifiers are known to be conservative:

CONSERVATIVITY:

Voor alle $A, B \subseteq U$: $Q_U(A, B) \Leftrightarrow Q_U(A, A \cap B)$

- Every student is dancing \Leftrightarrow Every student is a student that is dancing
- Most children are singing \Leftrightarrow Most children are children that are singing

Possible exception: *many* (Westerståhl, 1985)

Starting point

- Possible exception: *many* (Westerståhl, 1985):
 - (1) Many Scandinavians have won the Nobel price in literature
 - (a) Many Scandinavians are Scandinavians that have won the N.P.
 - (b) Many Scandinavians that have won the N.P. are Scandinavians
 - = Many Nobel prize winners are Scandinavians.
 - = Many (A,B) \Leftrightarrow M(B, B \cap A)

Many violates conservativity (results in a 'switched reading')

CONSERVATIVITY:

Voor alle A,B \subseteq U: $Q_U(A,B) \Leftrightarrow Q_U(A,A \cap B)$

The many meanings of *many*

- Cardinal reading
 - (1) Many students are left-handed in my class (i.e. 6 students)
 - Proportional reading:
 - (2) Many students got an A in my class (more than 50%)
 - Westerstahl's *many*?
 - (1) Many Scandinavians have won the Nobel Prize in literature
 - (2) Many N.P. winners are Scandinavians
- ⇒ 'switched reading'

Switching the arguments, iff ...

- The 'switched reading' only occurs iff (Herburger, 1997, 2001):
 - The quantifier is a weak quantifier
 - Quantifiers are either **weak** or **strong**, depending on whether they are respectively allowed in there-sentences or not (Milsark, 1979).
 - (5) There are {many/*many of/*all} parrots flying in the sky
 - So, (6) can never be interpreted as (6a)
 - (6) {All/Many of the} Scandinavians have won the N.P. in literature
 - (a) {All/Many of the} N.P. winners are Scandinavians
 - The switched reading is an instance of a '**focus affected reading**'

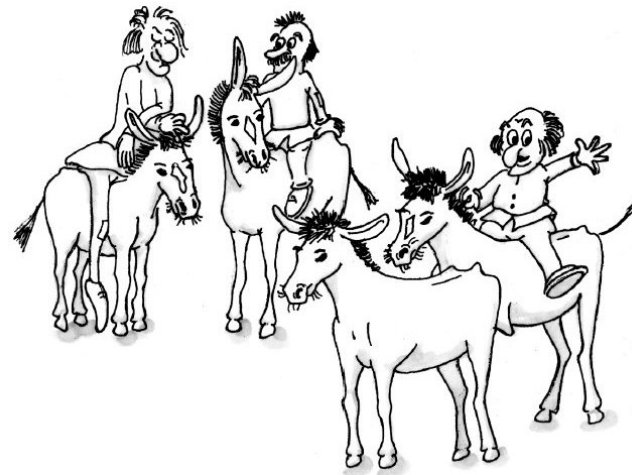
Focus affected reading

- The 'switched reading' only occurs iff (Herburger, 1997, 2001):
 - The quantifier is a weak quantifier
 - The NP is focused
- (7) Many SCANDINAVIANS have won the N.P. in literature
- (7') Many Nobel prize winners are Scandinavians
- (8) Many Scandinavians HAVE WON THE N.P. IN LITERATURE
- (8') #Many Nobel prize winners are Scandinavians

Does the focus affected reading occur in child and adult language and if so, how?

The acquisition of quantification

- Is every farmer riding a donkey?



Picture taken from Guasti (2002)

Adults: yes

Children: no, not that one

Different explanations

- Roeper and DeVilliers (1993): 'spreading'
- Philip (1995): Event Quantification Account
- Crain et al. (1999): Non-linguistic

- Weak Quantification Account (Drozd and Van Loosbroek, 1999) (cf. Geurts, 2003, Hollebrandse and Smits, 2006).

Weak quantification

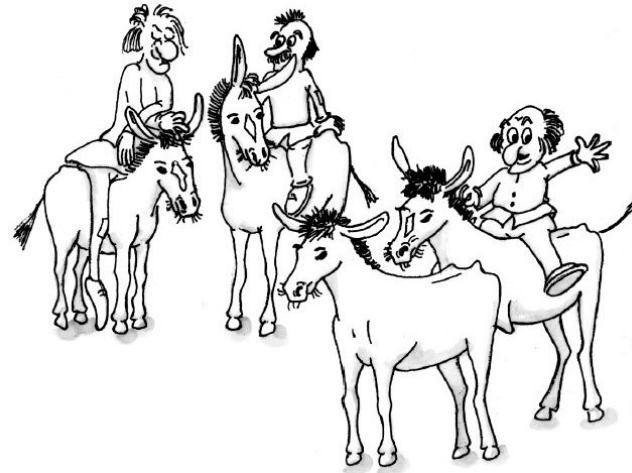
- Drozd and Van Loosbroek (1999): Weak Quantification Hypothesis
 - (1) Many Scandinavians have won the Nobel Prize in literature
 - (2) Many N.P. winners are Scandinavians

Analysis:

Many quantifies over the set of expected or normal frequency of Scandinavian Nobel Prize Winners (Westerståhl, 1985)

The acquisition of quantification

- Is every farmer riding a donkey?



Picture taken from Guasti (2002)

Adults: yes

Children: no, not that one

Does the focus affected reading occur in child and adult language and if so, how?

Predictions

- Children show a preference for a switched reading regardless the strength of the quantifier and focus type (Drozd and Van Loosbroek, 1999), adult prefer a switched reading if the NP is focused (Herburger, 1997, 2001)
- For example:
 - Children will significantly more often get a switched reading of the arguments of **many** in situations like the Scandinavian case i.e. :
 - All parrots are wearing hats
 - All hat wearers are parrots

Setup

- There is an effect of:
 - QUANTIFIER TYPE
 - Many
 - Many of
 - All
 - FOCUS TYPE
 - Set of entities whose properties are denoted by the VP
 - Set of entities whose properties are denoted by the NP
- Total of items: 22 (4 control items)

Procedure

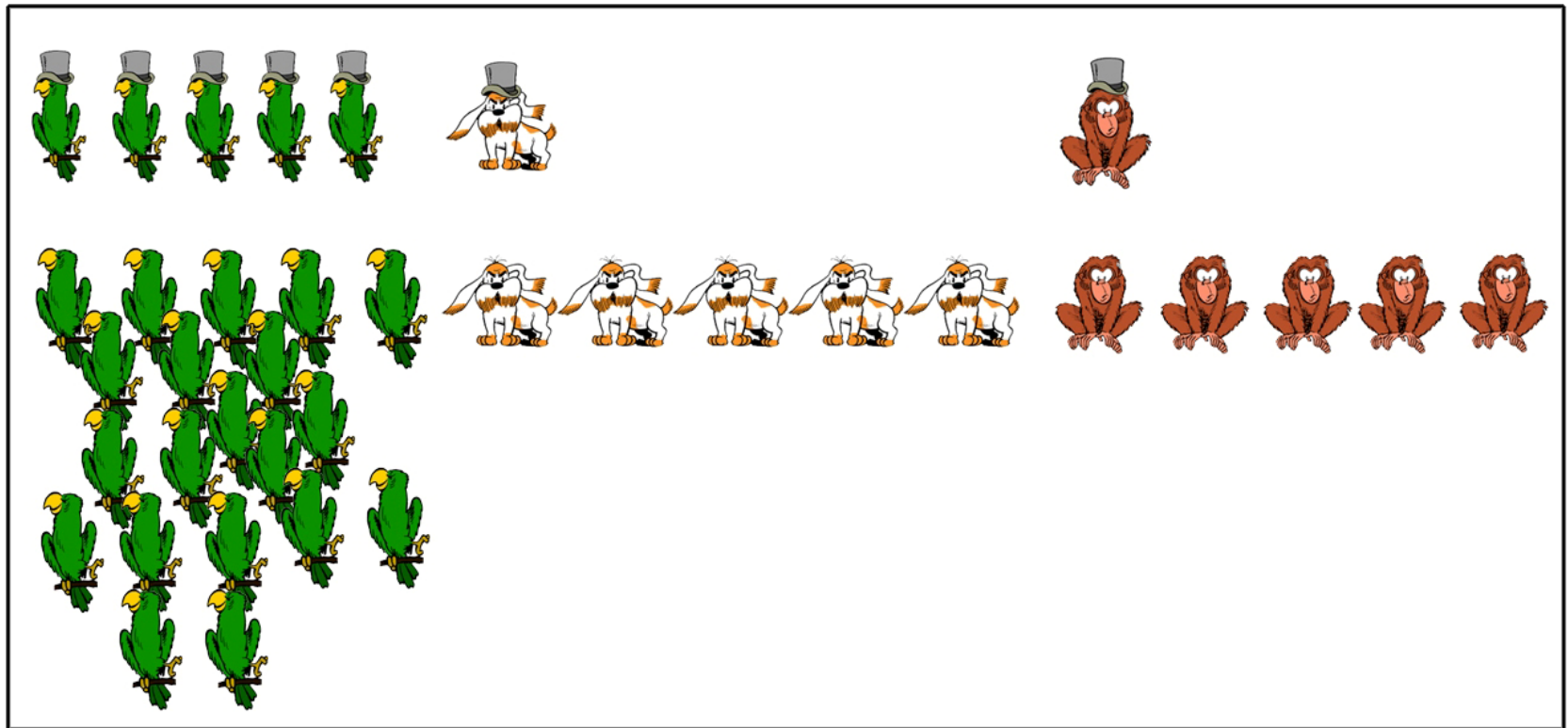
- 22 children (age range 4;1 - 7;32), 17 adults
- Truth-value judgment task
- Story:

At the university, I have built this computer and as you will see, there are a lot of pictures on it, but it is also able to play sentences via those speakers! But the problem is, I don't know whether I build this computer entirely the right way. So, I need your help to check whether the computer has been built the right way or the wrong way.

Do you want to help me?

OK, well, I will show you the pictures I have got on this computer and when I will show you a picture, you will also hear something. Now, if you just want to tell me if this matches the picture or not. All right?

Items: *many* and *many of*



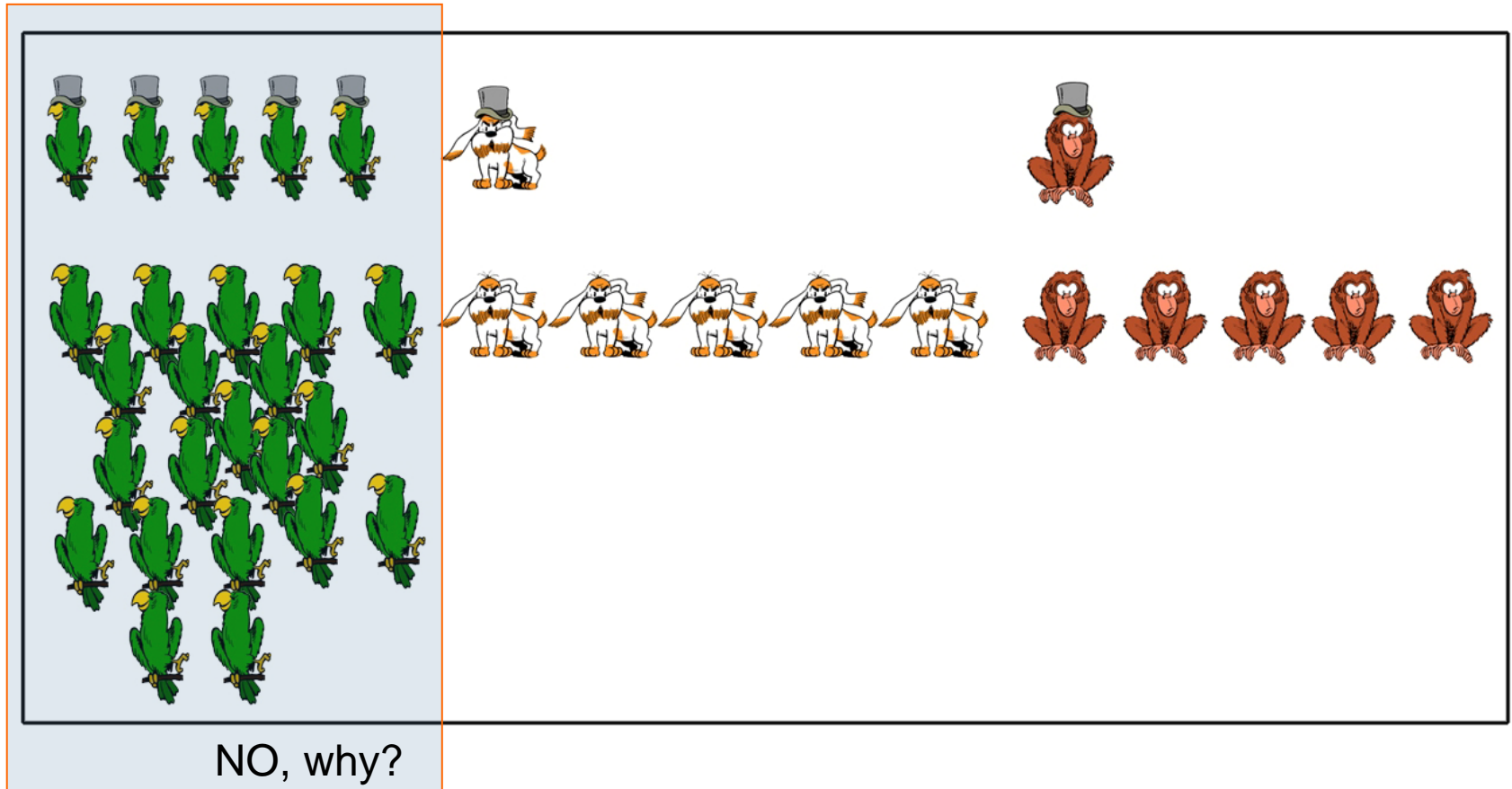
Items: *many* and *many of*

- Many parrots are wearing hats

YES, why?


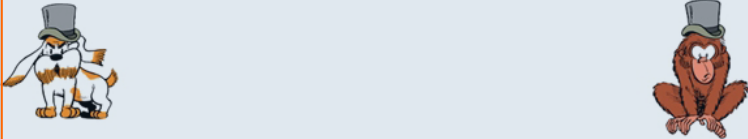
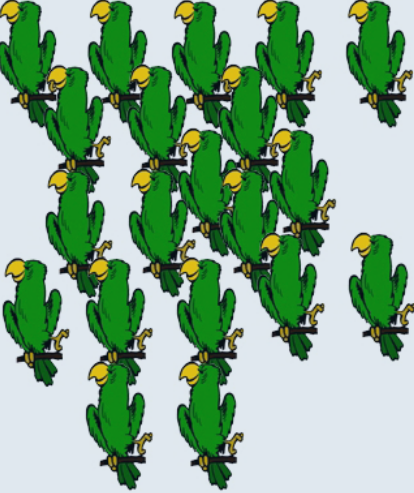

Items: *many* and *many of*

- Many parrots are wearing hats



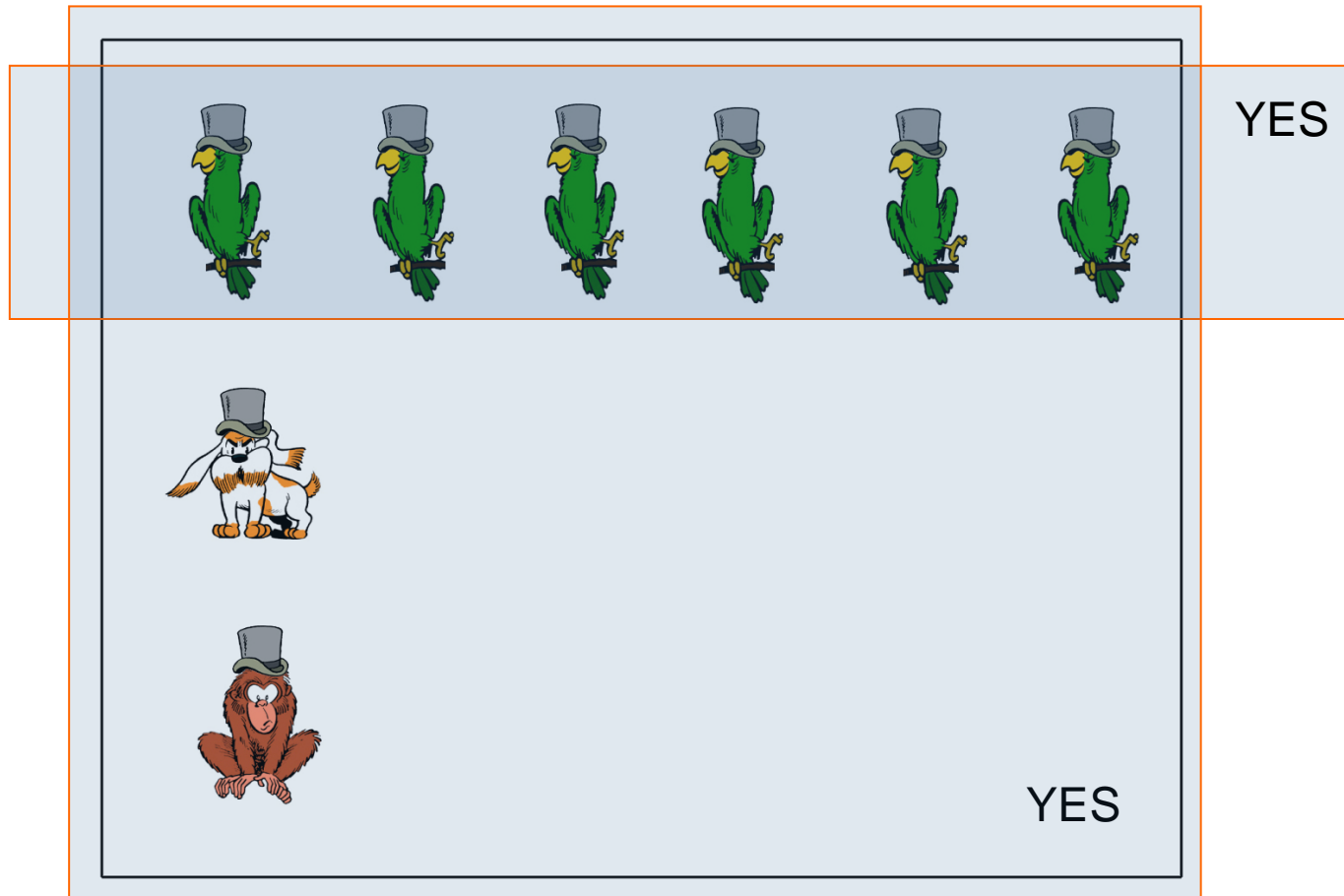
Items: *many* and *many of*

- **Many of the** parrots are wearing hats

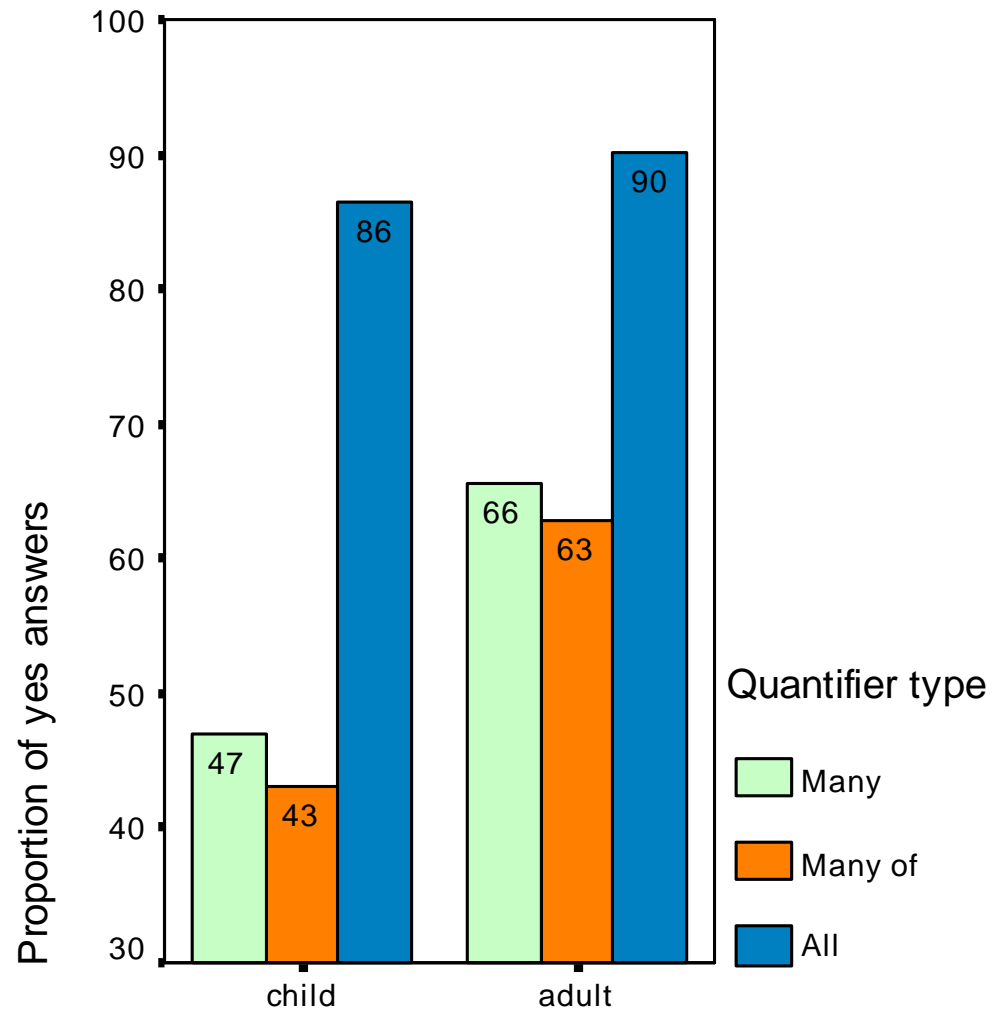
	 <p style="text-align: right;">NO, why?</p>
	
<p>NO, why?</p>	

Items: *all*

- All parrots are wearing hats



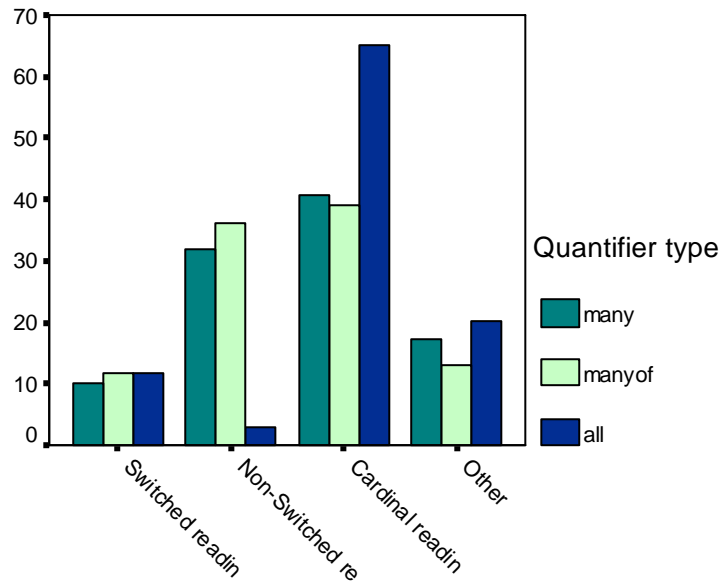
Results



Explanation types

Children's answer types

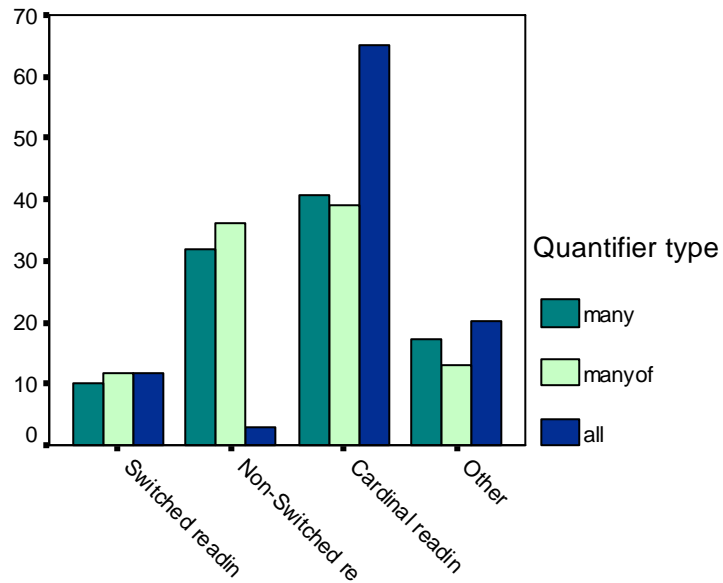
Focus NP



Explanation types

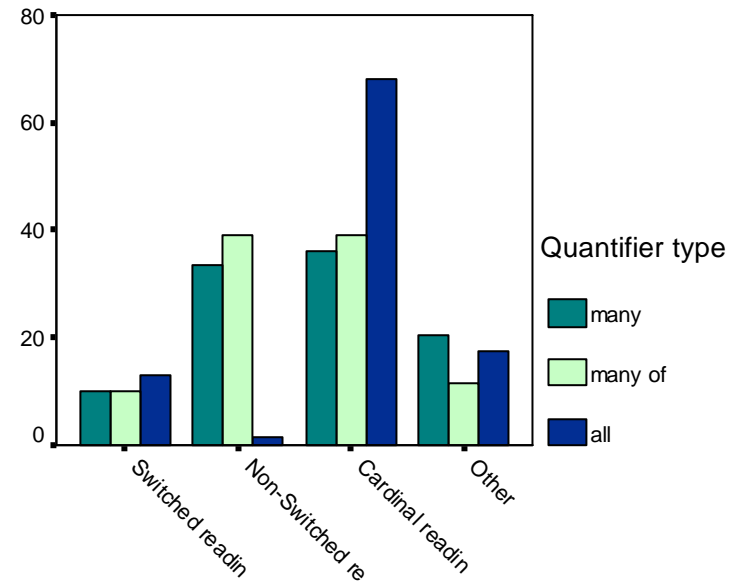
Children's answer types

Focus NP

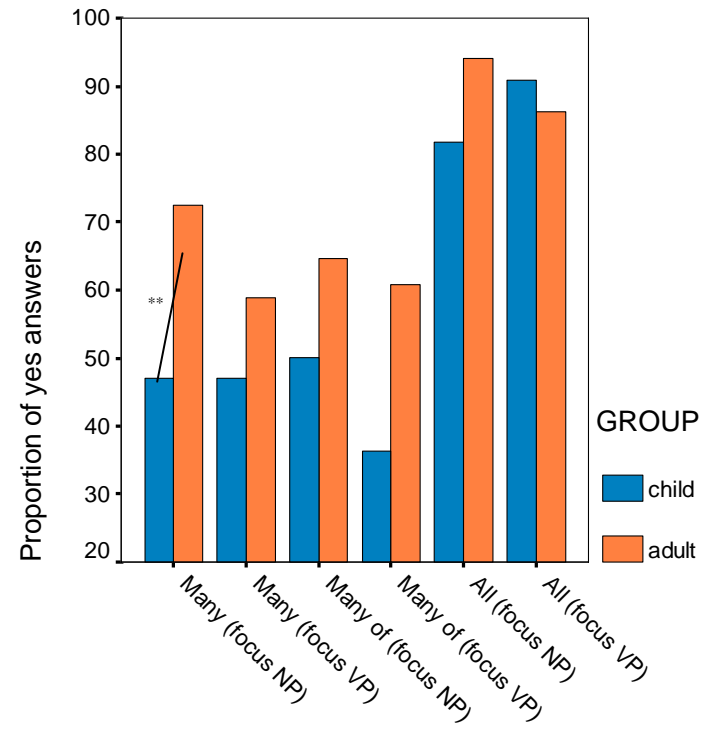


Children's answers types

Focus VP



Focus affected quantification (adults vs. children)



Results in sum

- Westerståhl type answers exists in the child's language
- No effect of focus for the children, an effect for the adults
- The ambiguity of *many* between a cardinal, proportional and switched reading effects the child's answer
- Children do not distinguish between *many* and *many of*

Conclusions

- Children can apply the Westerståhl interpretation
- Next to domain of the quantifier, the acquisition of quantification should focus on the cardinality and/or proportionality of the quantifier
- *Many of* and *all* are weak, symmetrical quantifiers; they allow switched readings
- To learn the strong nature of these quantifiers, the child might have to learn an extra syntactic step (QR à la Herburger (2001); syntactic positions à la Abney (1987))

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