

*or*

# The existence of Westerståhl children

Erik-Jan Smits<sup>1</sup>, Tom Roeper<sup>2</sup> and Bart Hollebrandse<sup>1</sup>

<sup>1</sup> University of Groningen, The Netherlands

<sup>2</sup> University of Massachusetts, Amherst, USA

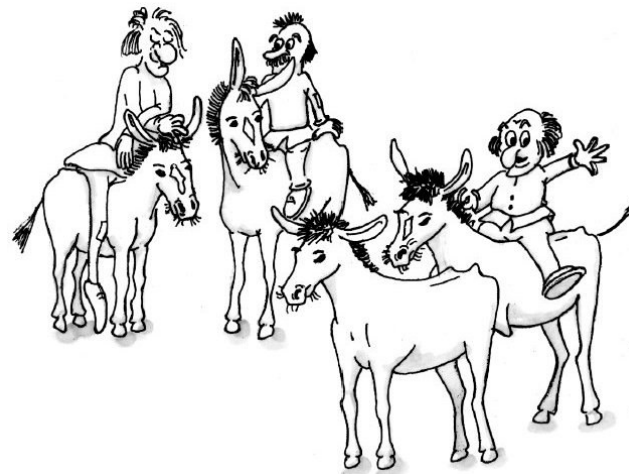
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# Outline

- The acquisition of quantification
- The 'switched reading' and *many*
  - The Weak-Strong Distinction
  - Focus
- Experiment
  - Research question and prediction
  - Method
  - Results
- Conclusions

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

# Weak quantification

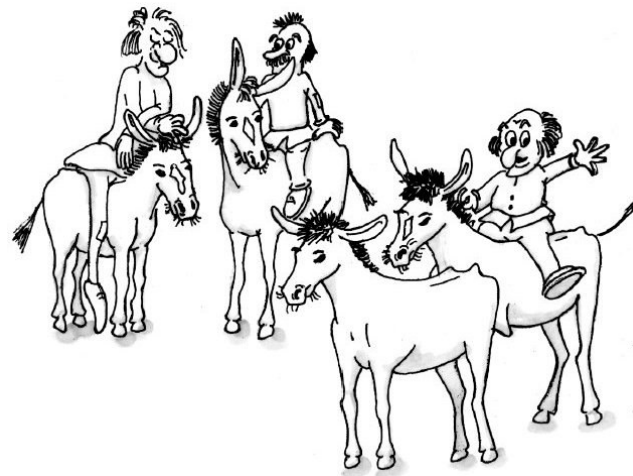
- Drozd and Van Loosbroek (1999): Weak Quantification Hypothesis
  - (1) Many Scandinavians have won the Nobel Prize in literature
  - (2) Many N.P. winners are Scandinavians

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

What does this mean for the acquisition of weak quantifiers like *many*?

# The many meanings of *many*

- Cardinal reading
  - (1) There are many farmers in the room (i.e. 6 farmers)
- Proportional reading:
  - (2) Many of the students in my class got an A (more than 50% )
- Westerståhl's *many*?
  - (3) Many Scandinavians have won the Nobel Prize in literature
  - (4) 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 switched reading occur in child 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)
- 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*

- Many parrots are wearing hats

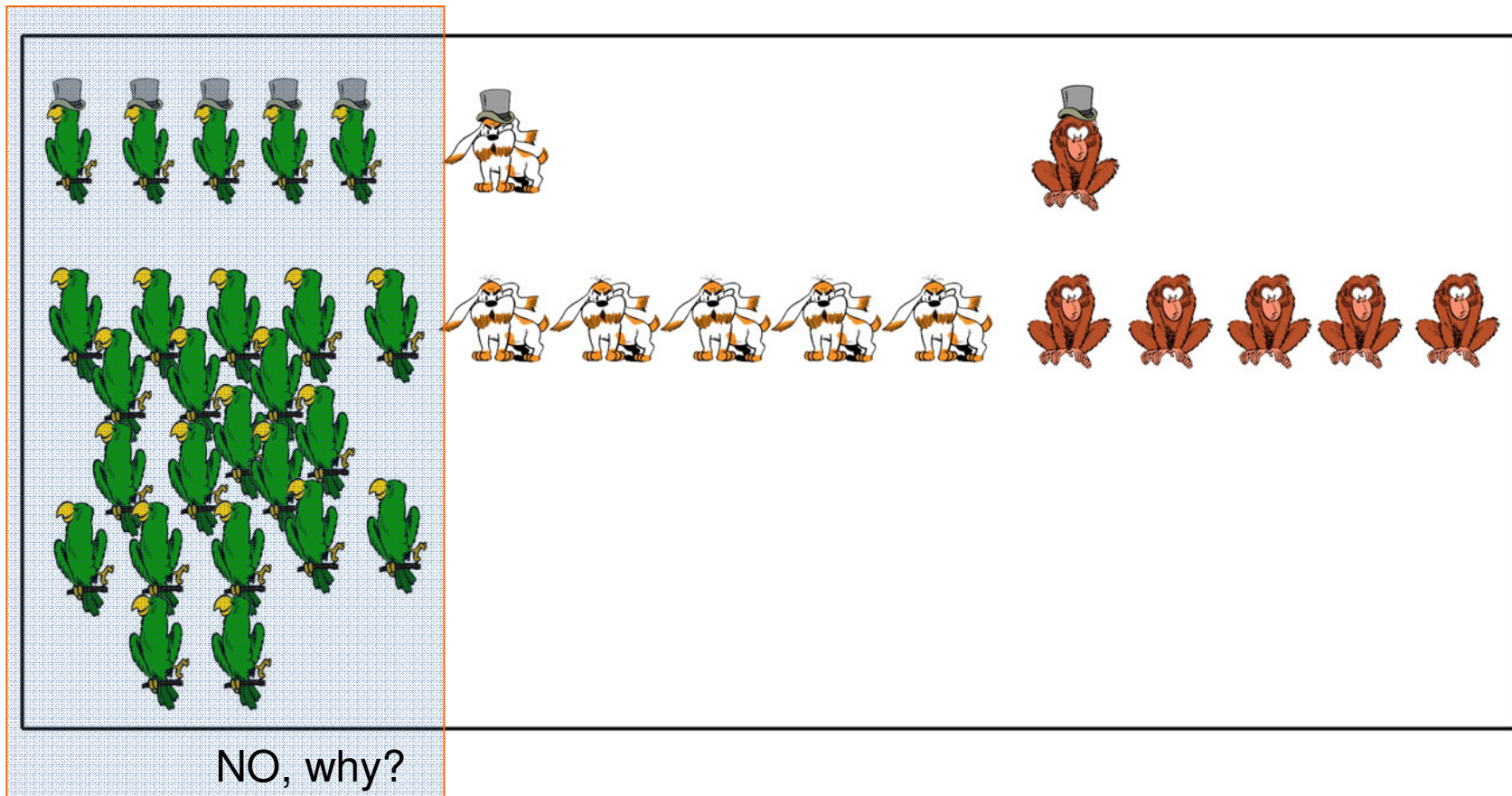
The image illustrates a visual experiment designed to test the understanding of the word "many" and the phrase "many of".

The top row shows a set of items: 5 parrots wearing hats, 1 dog wearing a hat, and 1 monkey wearing a hat. To the right of these items is the text "YES, why?".

The bottom row shows a larger set of items: 15 parrots (10 wearing hats and 5 not wearing hats), 5 dogs wearing hats, and 5 monkeys not wearing hats.

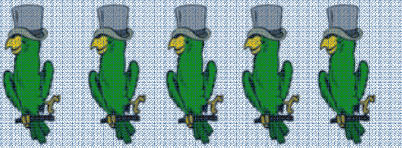

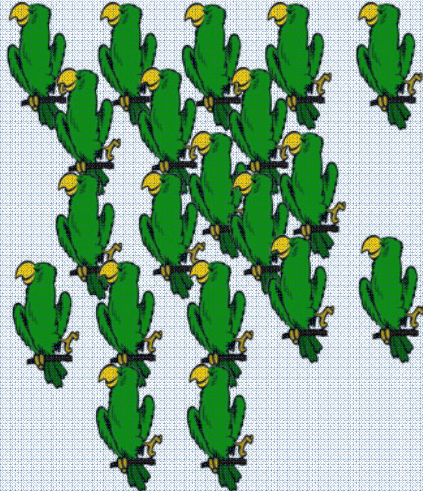

# Items: *many* and *many of*

- Many parrots are wearing hats



# Items: *many* and *many of*

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

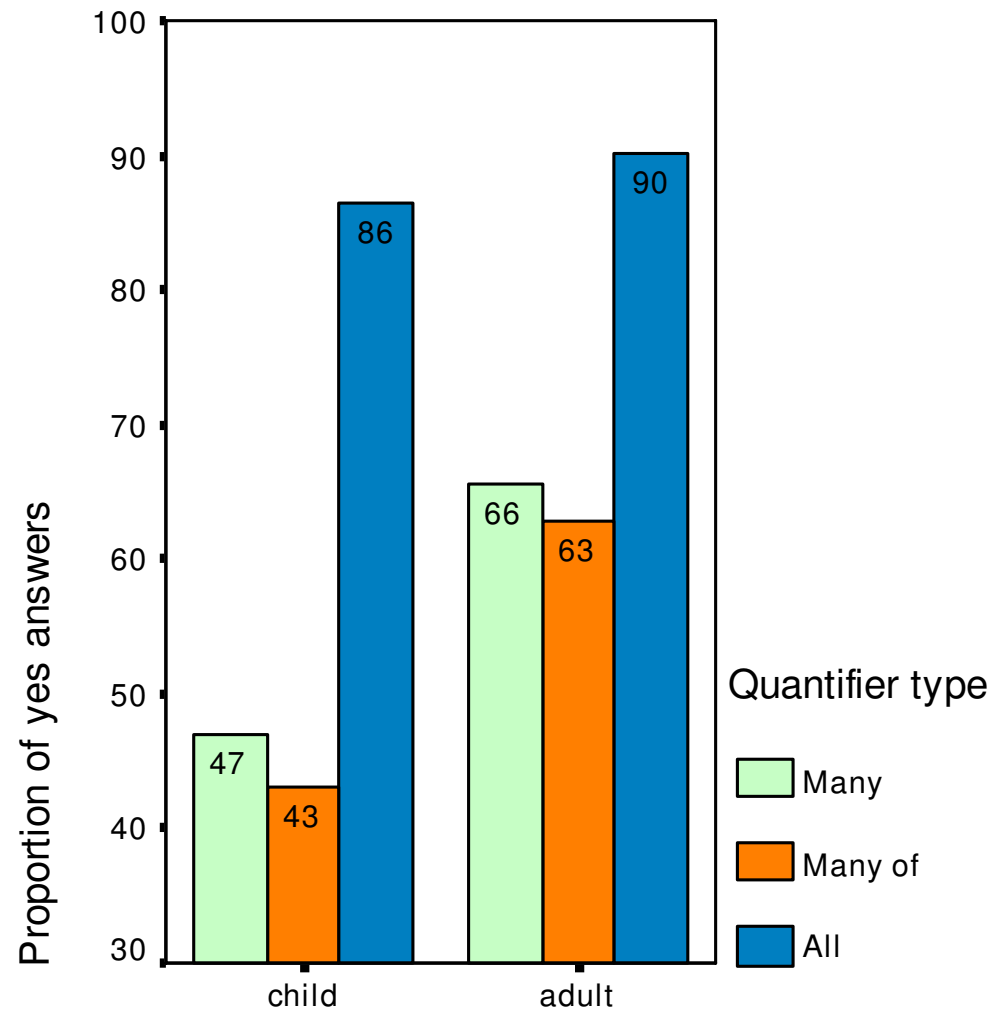
	 <p>NO, why?</p>
	 <p>NO, why?</p>

# Items: *all*

- All parrots are wearing hats



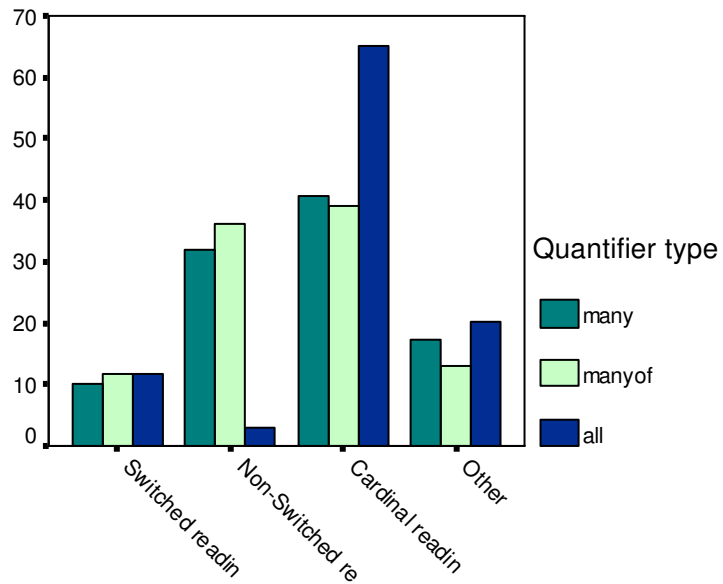
# Results



# Explanation types

Children's answer types

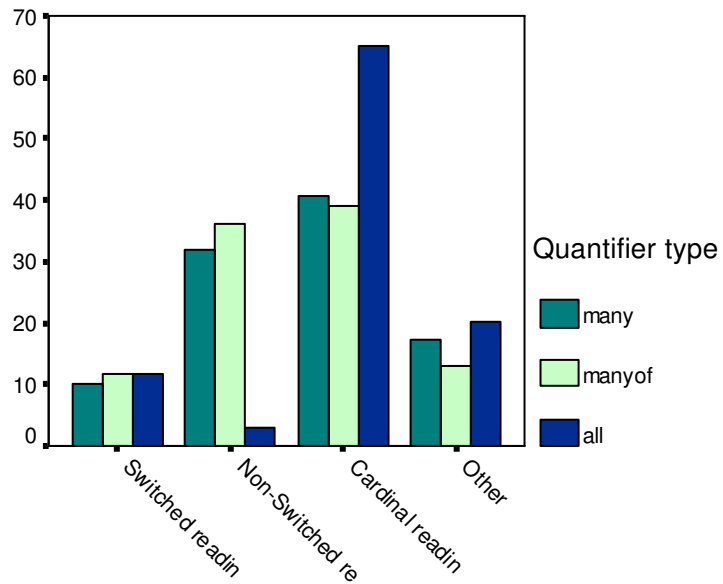
Focus NP



# Explanation types

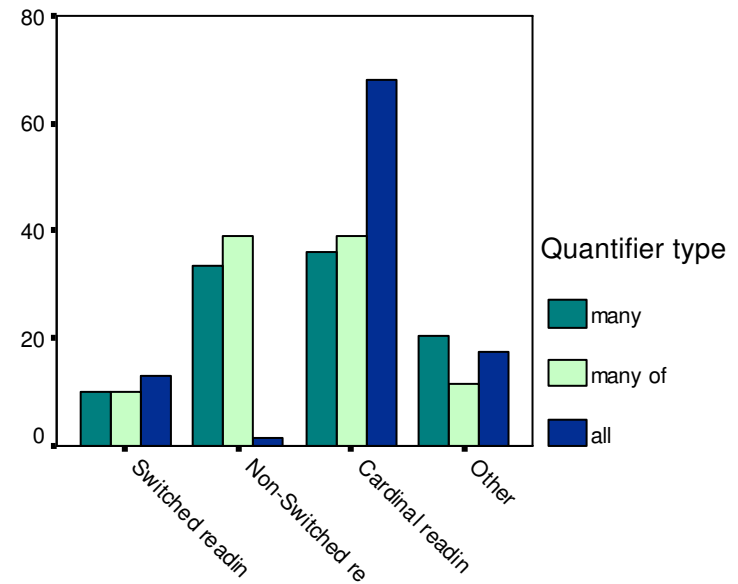
Children's answer types

Focus NP



Children's answer types

Focus VP



## 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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