

Covert Exhaustifier or not? Child language can help

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1. Introduction

- Mandarin particle *dou* ‘all’ can license a free choice item (FCI)
- Evoke a universal free choice (\forall -FC) reading (e.g., Giannakidou & Cheng 2006; Xiang 2016, 2020).

- 1) **Shei** keyi chi pingguo?
who can eat apple
‘Who can eat the apples?’
- 2) **Shei** *(**dou**) keyi chi pingguo.
who all can eat apple
‘Anyone can eat the apples.’

1. Introduction

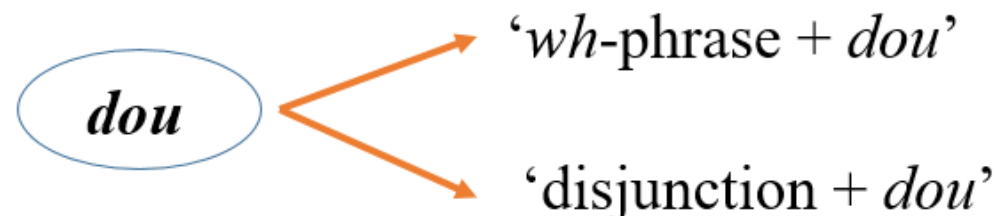
- ‘disjunction + *dou*’ also gets a \forall -FC reading:

3) Yuehan **huozhe** Mali **dou** keyi jiao jichu hanyu.

John or Mary all can teach intro Chinese

Intended: ‘Both John and Mary can teach Intro Chinese.’ (Xiang 2020)

- It is the semantics of *dou* that evokes the \forall -FC reading (Xiang 2020).¹



¹ Note that the element that functions as a *wh*-phrase also has other usages. It is an indeterminate system where their exact interpretation is not inherently determined but determined by the licensing context. Here I will gloss it as a *wh*-phrase for ease of exposition. It will not affect my conclusion later.

2. Background

2.1. Theoretical analyses

- It is the semantics of dou that evokes the \forall -FC reading (Xiang 2020).

$$[[dou_C]] = \lambda p \lambda w: \underbrace{\exists q \in S_{UB}(p, C)}_{(a)} \cdot \underbrace{p(w) = 1}_{(b)} \wedge \underbrace{\forall q \in S_{UB}(p, C) [O_C(q)(w) = 0]}_{(c)}$$

- a. Non-vacuity presupposition:* The prejacent has at least one sub-alternative.
- b. Prejacent assertion:* The prejacent is true.
- c. Anti-exhaustification assertion:* The exhaustification of each sub-alternative is false.

2. Background

2.1. Theoretical analyses

- However, ‘disjunction + *dou*’ displays the Modal Obviation effect:

4) *Yuehan **huozhe** Mali **dou** **jiao-guo** jichu hanyu.

John or Mary all teach-EXP intro Chinese

Intended: ‘Both John and Mary **have taught** Intro Chinese.’ (Xiang 2020)

5) *Yuehan **huozhe** Mali **dou** **bixu** jiao jichu hanyu.

John or Mary all must teach intro Chinese

Intended: ‘Both John and Mary **must** teach Intro Chinese.’ (Xiang 2020)

1. Introduction

- An extra **covert *O*-exhaustifier** in ‘disjunction + *dou*’

6) John or Mary **dou** can teach Intro Chinese.

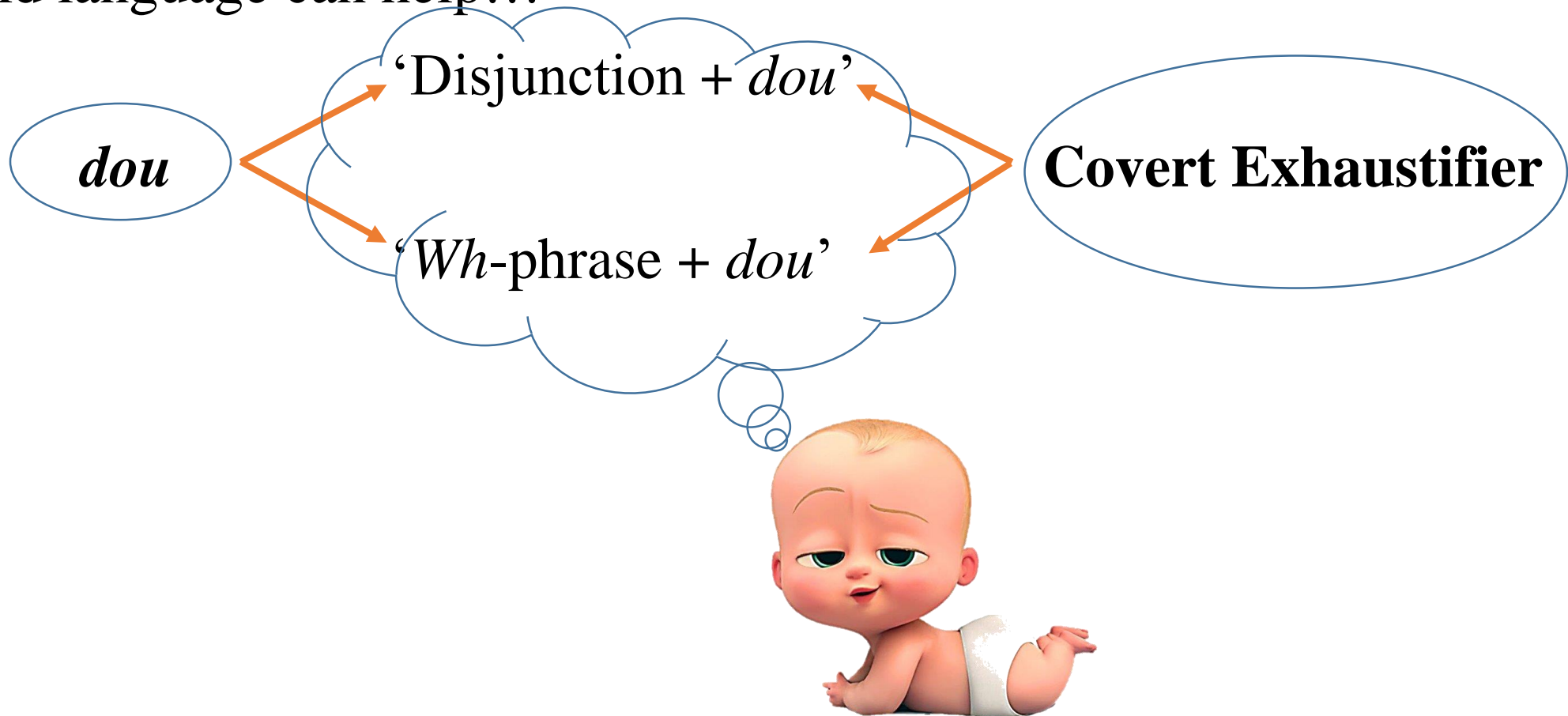
LF: *dou*_C [_S [John or Mary] λx can [*O*_C [_{VP} x teach Chinese]]]

(John and Mary each can teach Intro Chinese alone.)

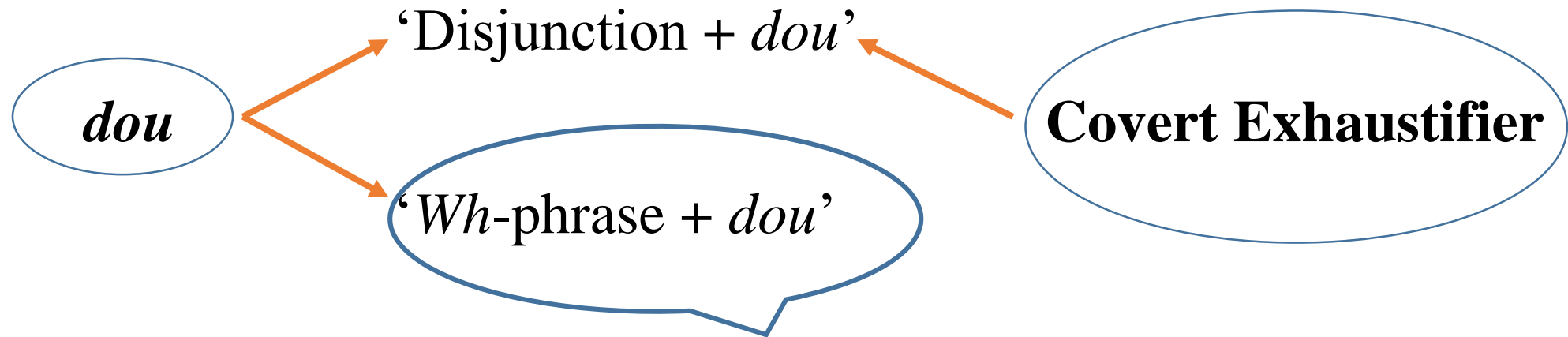
- However, Xiang does not discuss whether there is any *O*-exhaustifier for ‘*wh*-phrases + *dou*’.

1. Introduction

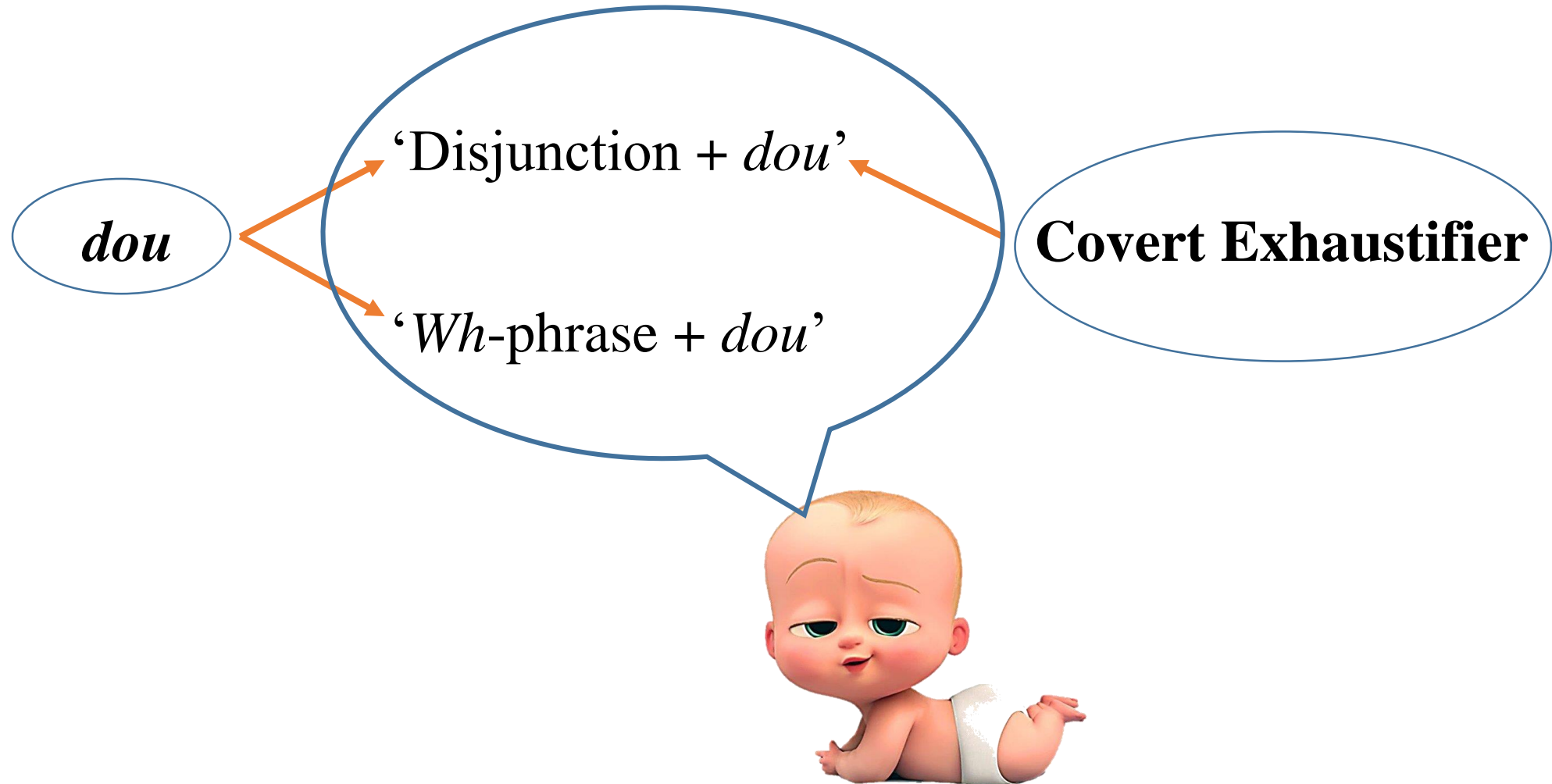
- Child language can help...



1. Introduction



1. Introduction



1. Introduction

- Main questions:

- When do Mandarin-speaking children command the \forall -FC reading of ‘*wh*-phrase + *dou*’ and ‘disjunction + *dou*’?
- Do they acquire both constructions around the same time?
- Or is there any ordering effect?

1. Introduction

- Zhou (2017): ‘*wh*-phrase + *dou*’ with a deontic modal
4-year-old Mandarin-speaking children
- See also Huang, Zhou & Crain (2018), Yang, Goodhue, Hacquard & Lidz (2020), Zhou & Crain (2011)

1. Introduction

- Jing, Crain & Hsu (2005): ‘disjunction + *dou*’; 4- to 6-year-old children

7) Na-le chuizi **huozhe** qianzi de gongren **dou** daizhe maozi.

Take-ASP hammer or pliers DE worker all wear-ASP hat

‘The workers that took a hammer **or** a pair of pliers were all wearing a hat.’

- A downward-entailing (DE) context:

8) a. The workers that took **a cake** were wearing a hat.

b. The workers that took **a chocolate cake** were wearing a hat.

- DE contexts license the conjunctive inference of disjunction (Crain 2012; Chierchia 2004; among many others).

2. New Experiments

2.1. Acquisition of ‘disjunction + *dou*’

- Method:

- Truth-Value Judgment Task (TVJT) (Crain & Thornton 1998)

- Prediction mode

- Participants played a ‘guessing game’ with the puppet Kermit.

- Laptop based

- Participants: 24 Mandarin-speaking children (age 5-8;04, mean 6;09)

- 10 Mandarin-speaking adults

- Monolingual

2. New Experiments

2.1. Acquisition of 'disjunction + *dou*'

- Materials:

- 2*2 design

- 2 types of construction: disjunction with *dou* or without *dou*

- 9) The little cat **or** the rooster can teach English.

- 10) The little cat **or** the rooster **dou** can teach English.

- 2 types of scenario: one disjunct was true or both disjuncts were true

2. New Experiments

2.1. Acquisition of ‘disjunction + *dou*’

- Materials:

- 2*2 design
- 2 types of construction: disjunction with *dou* or without *dou*
- 2 types of scenario: one disjunct was true or both disjuncts were true

	One disjunct was true	Two disjuncts were true
‘disjunction’	True	True/False
‘disjunction + <i>dou</i> ’	False (Critical)	True

2. New Experiments

2.1. Acquisition of 'disjunction + *dou*'

- Materials:

- 4 items for each condition; 16 test items in total.
- The two constructions were divided into two sessions; 8 test items for each
- Eight control items: four **true** items, four **false** items
 - 11) The little cat can eat the cake.
- Two practice items (one true item and one false item).
- Within-subject design





The little cat **or** the rooster **do** can teach English.

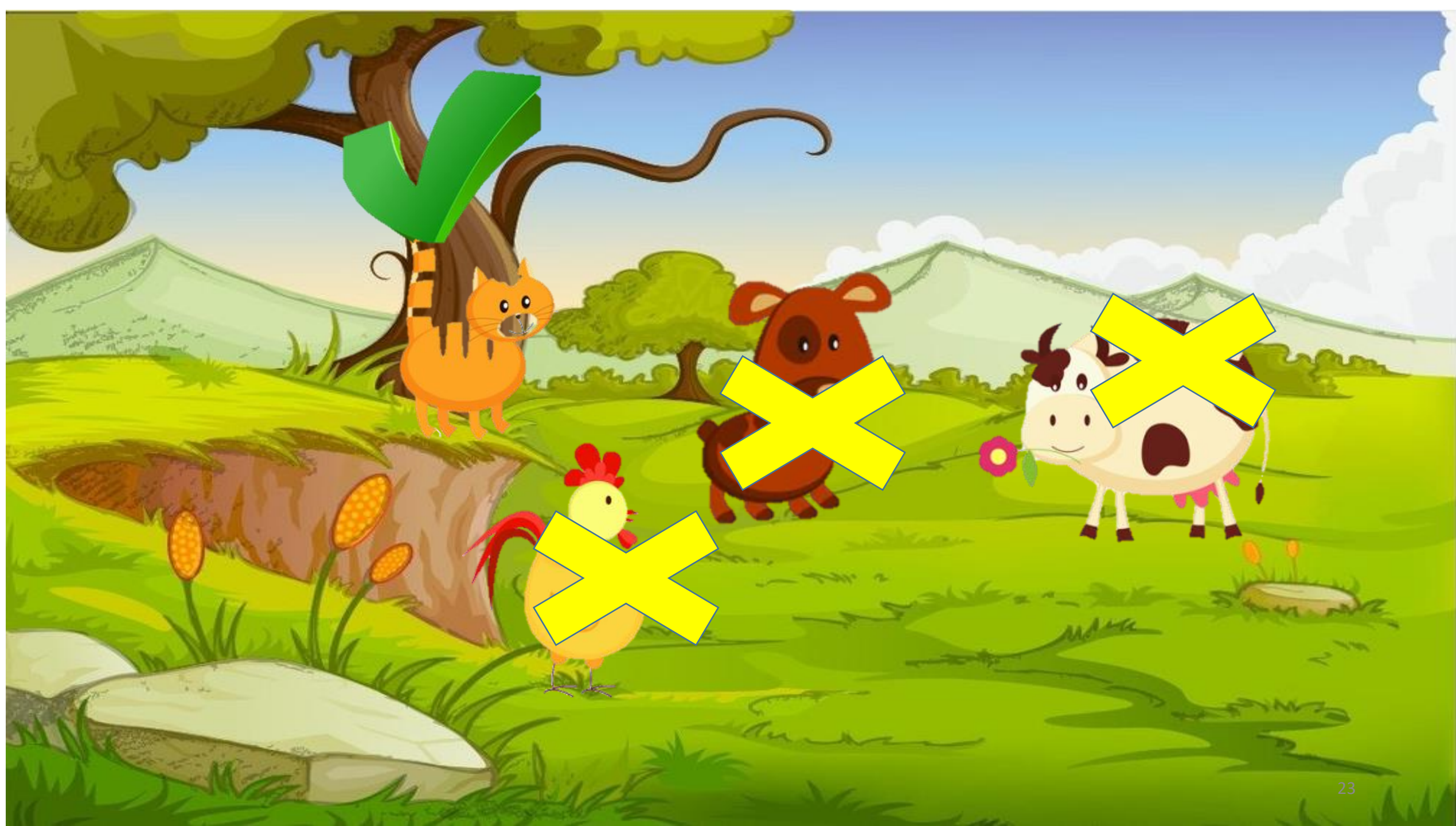


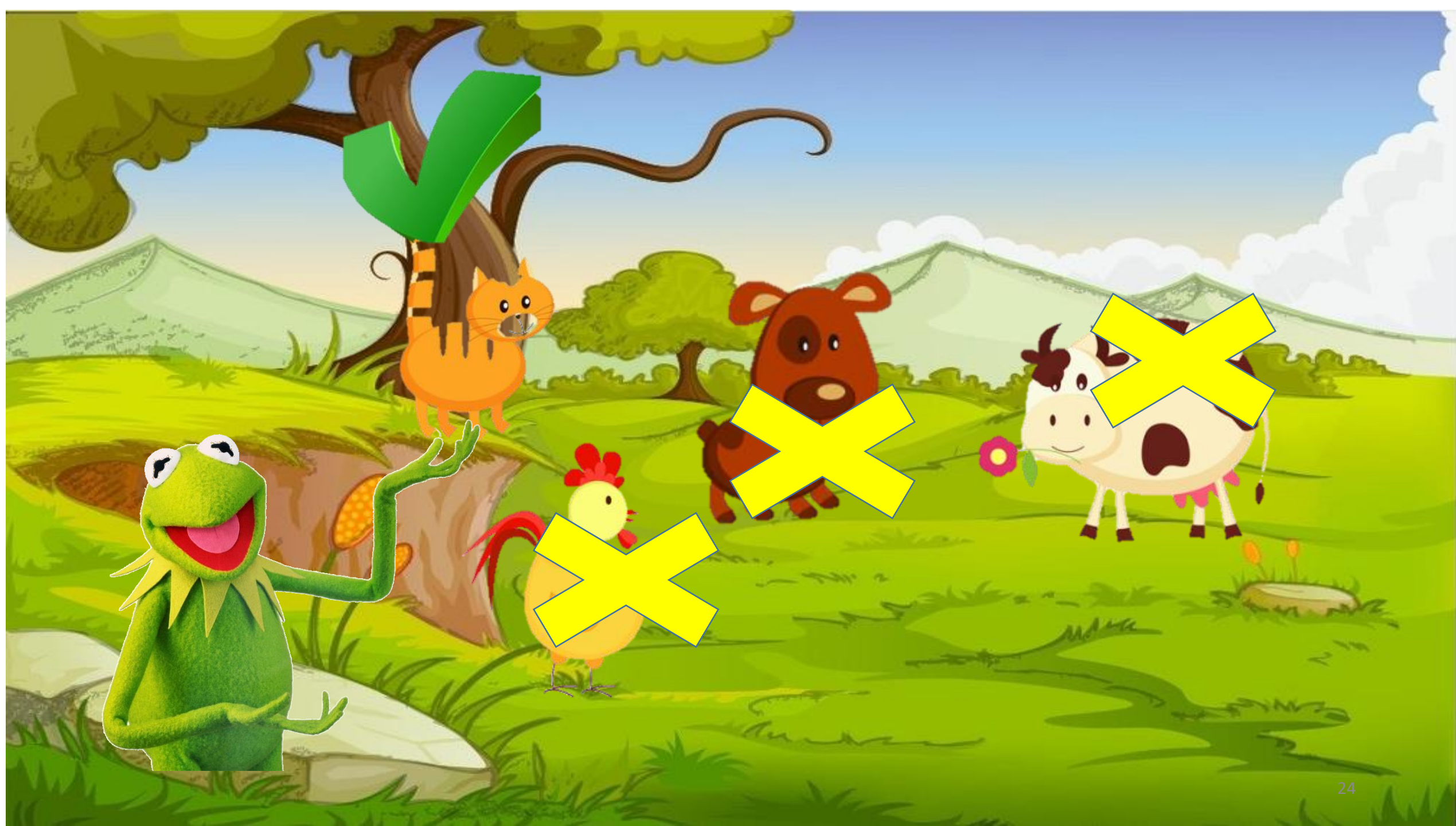












2. New Experiments

2.1. Acquisition of 'disjunction + *dou*'

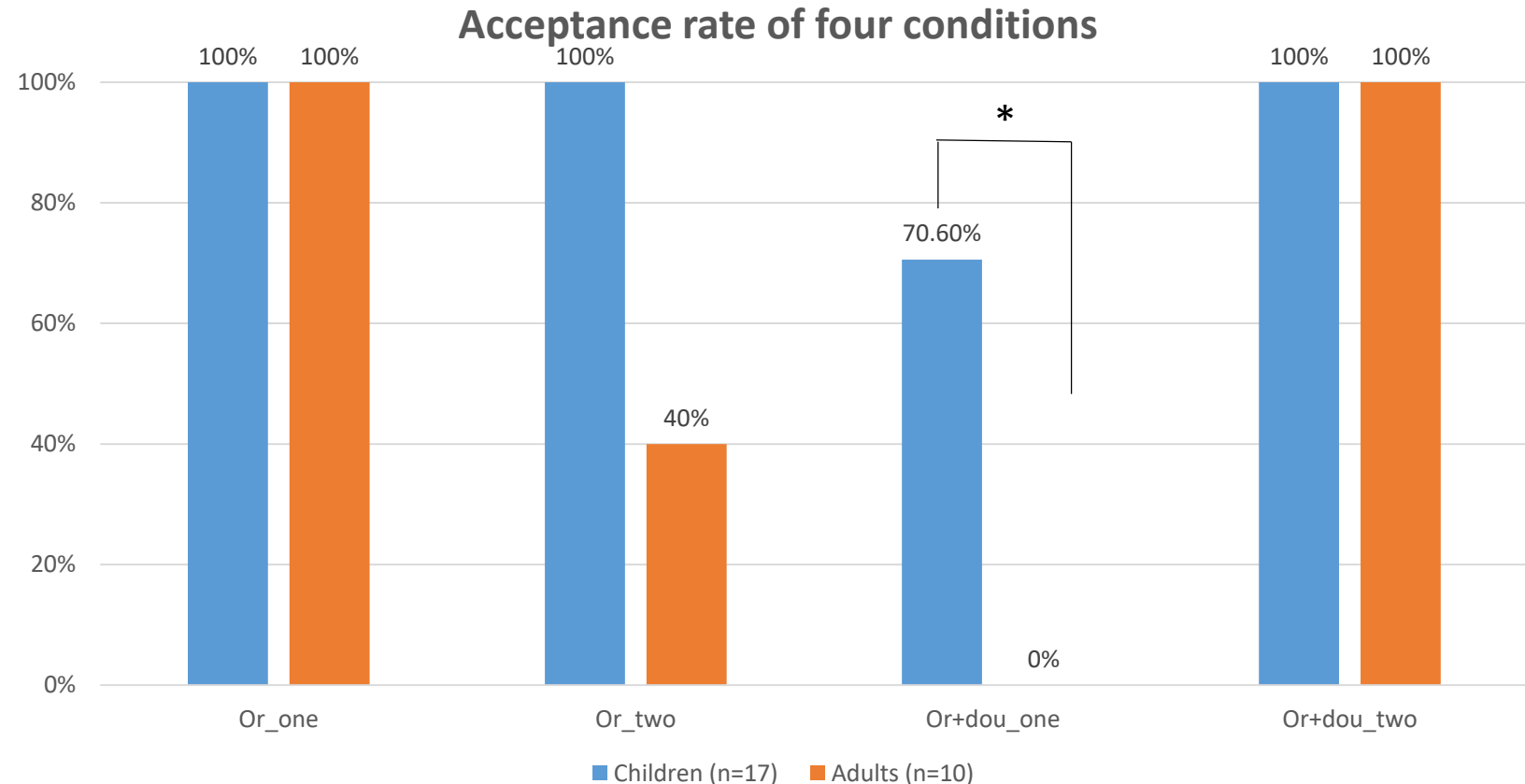
- Results:

- 7 children showed a conjunctive reading of disjunction.

2. New Experiments

2.1. Acquisition of 'disjunction + *dou*'

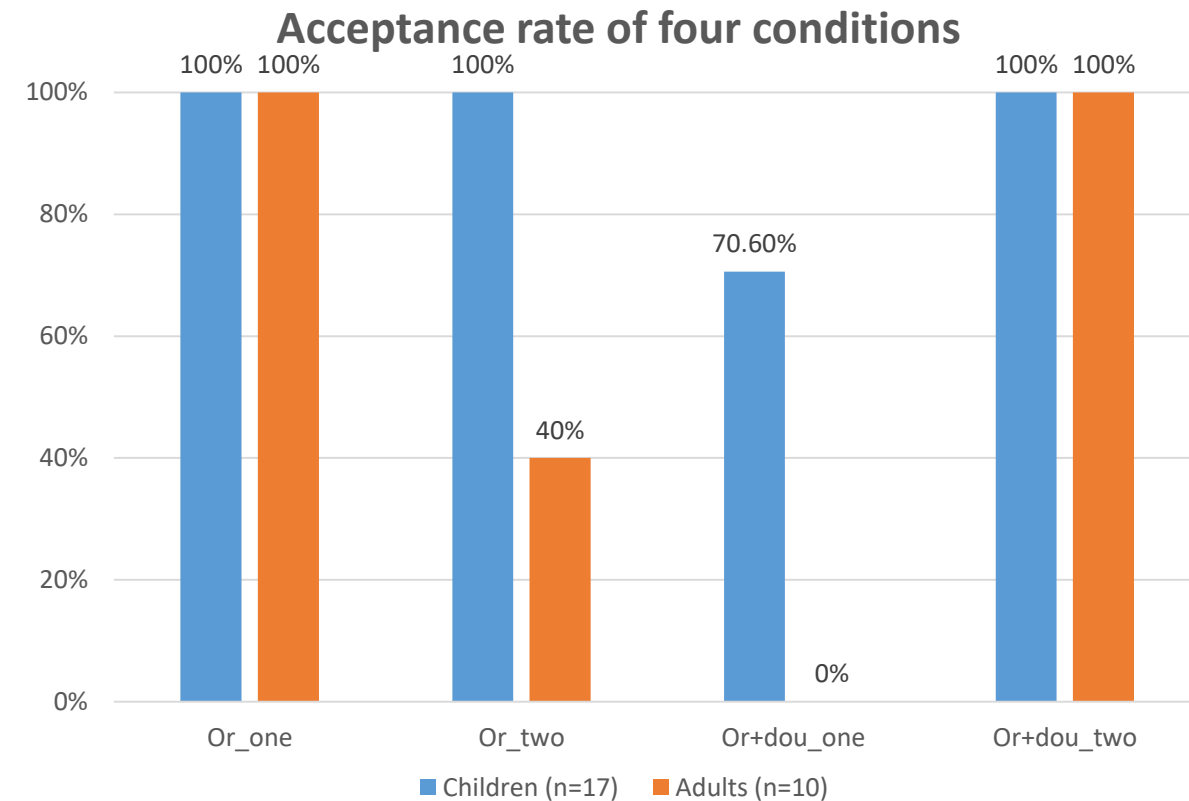
- For the remaining 17 children (age 5-8;4, mean: 6;11) and the 10 adults, the results are shown below:



2. New Experiments

2.1. Acquisition of 'disjunction + *dou*'

- Both children and adults accepted 'or' in 1-disjunct true scenarios.
- In 2-disjunct true scenarios, adults accepted the use of 'or' **40%**, while children always accepted it.
 - Children failed to derive scalar implicatures
- When 'disjunction + *dou*' used in 1-disjunct true scenarios, adults never allowed it while children accepted it **70.6%** of the time.
 - Children failed to derive \forall -FC.



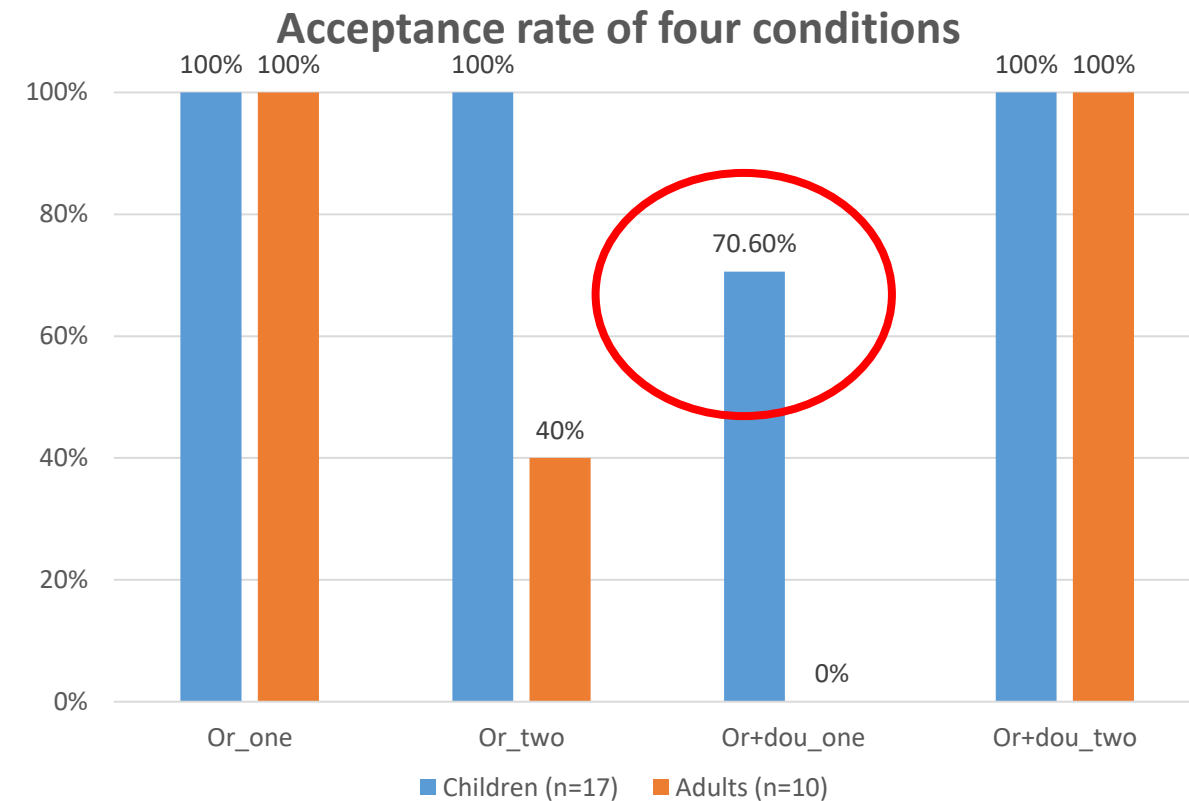
2. New Experiments

2.1. Acquisition of 'disjunction + *dou*'

- 5 children *never* accepted 'disjunction + *dou*' in 2-disjunct true scenarios.

(Adult-like performance)

- 12 always accepted it (100%).



2. New Experiments

2.1. Acquisition of ‘disjunction + *dou*’

- To sum up, most children failed to get the \forall -FC reading of ‘disjunction + *dou*’.
- Why?
- Lack the knowledge of the FC licenser use of *dou*?
- If so, these children should also fail to get the \forall -FC reading of ‘*wh*-phrase + *dou*’.

2. New Experiments

2.2. Acquisition of '*wh*-phrase + *dou*'

- Method:

- Question-Statement task (Zhou & Crain 2011)

- Kermit made an utterance at the end of each story.

- The child judged whether the utterance was a statement or a question.

- Participants: the same 17 children (age 5-8;4, mean: 6;11)

- the same 10 adults

2. New Experiments

2.2. Acquisition of '*wh*-phrase + *dou*'

- Materials:

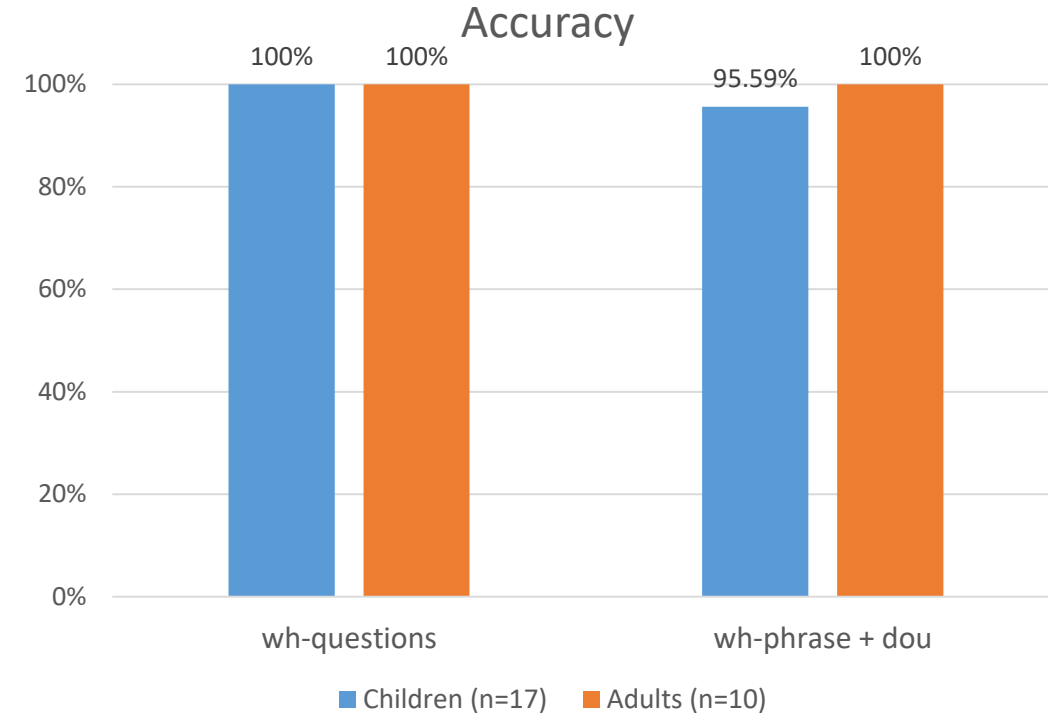
- 2 types of construction: *wh*-phrases with *dou* or without *dou*
- 4 items for each structure
- For '*wh*-phrase + *dou*', two **true** items and two **false** items.

2. New Experiments

2.2. Acquisition of '*wh*-phrase + *dou*'

■ Results:

- Both adults and children provided correct answers for *wh*-questions.
- Adults got the \forall -FC reading of '*wh*-phrase + *dou*'.
- Almost all the children also showed ceiling performance.
- Compatible with previous findings



3. Discussion & Conclusion

5- to 7-year-old children $\left\{ \begin{array}{l} \text{'disjunction + } *dou*\text{' } * \\ \text{'} *wh*\text{-phrase + } *dou*\text{' } \checkmark \end{array} \right.$

- The only child who failed at '*wh*-phrase + *dou*' also failed at 'disjunction + *dou*'.

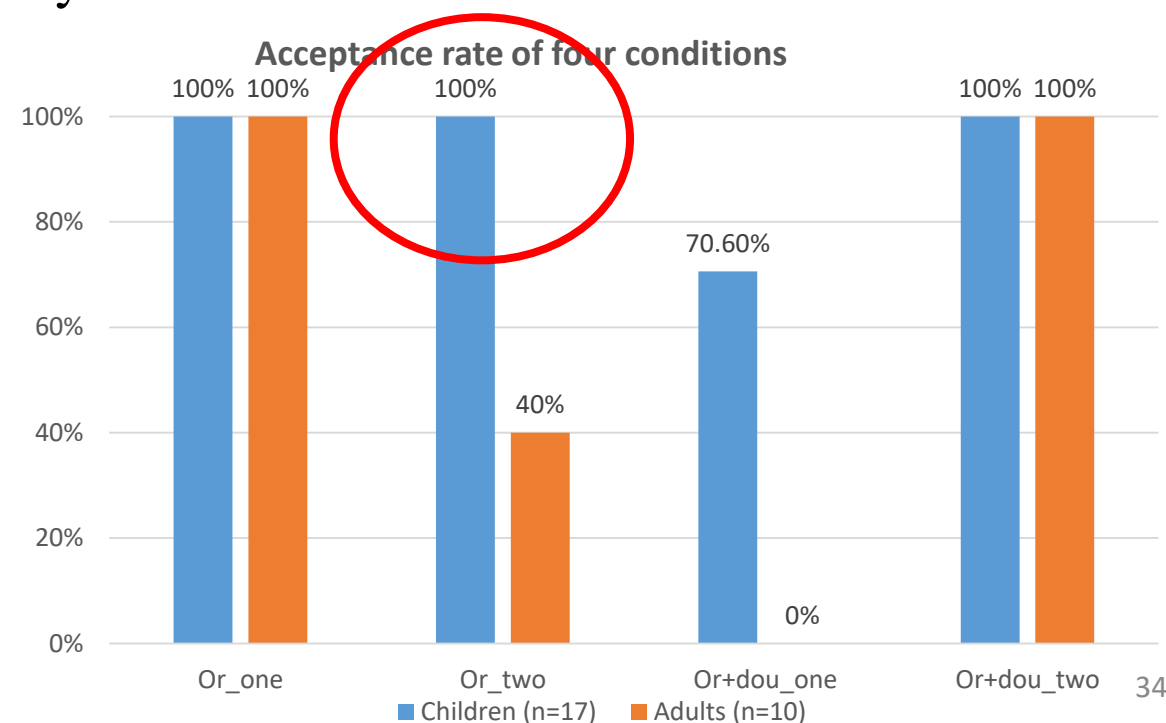
3. Discussion & Conclusion

- Competition between Scalar Implicatures and \forall -FC inferences?

12) John or Mary dou can teach Chinese.

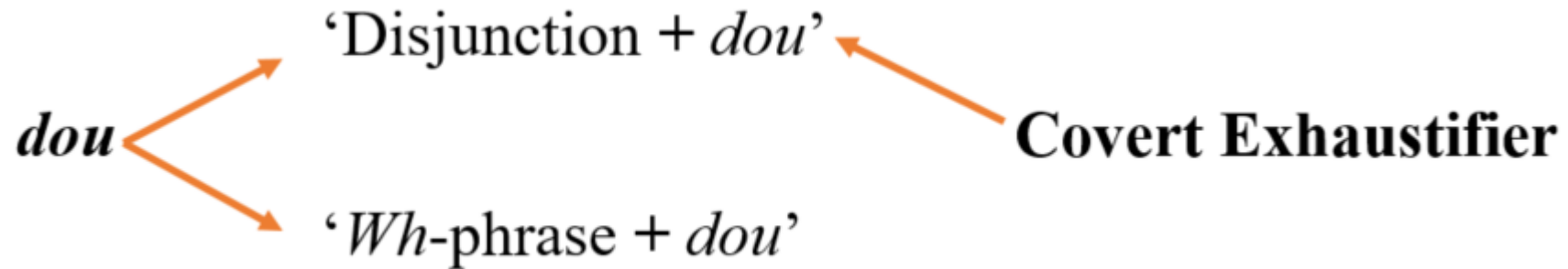
SI: John or Mary can teach Chinese, but not both can teach Chinese.

FC: John can teach Chinese and Mary can teach Chinese.



3. Discussion & Conclusion

- They are different in structure?



3. Discussion & Conclusion

- Processing limitations?
- The disjunction is a connective, expressing a relationship between two distinct alternatives.
- It may incur a processing burden for children, who are assumed to have limited processing capacities (e.g., Borga & Snyder 2018; Lidz et al. 2017; Trueswell et al. 1999; Wang 2019).
- Prediction: if the processing burden of disjunction can be reduced, the computation of the \forall -FC reading will be facilitated.

3. Discussion & Conclusion

- Erlewine (ms):

- i. Disjunctive *huozhe* ‘or’:

$$\begin{array}{ll}
 \text{a. } \left[\begin{array}{c} \exists \quad \text{JP} \\ \text{DP} \quad \text{J} \quad \text{DP} \\ \text{LS} \quad \quad \text{WW} \end{array} \right]^o = \lambda P_{\langle e,t \rangle} . P(\text{LS}) \vee P(\text{WW}) & \text{b. } \left[\begin{array}{c} \exists \quad \text{JP} \\ \text{DP} \quad \text{J} \quad \text{DP} \\ \text{LS} \quad \quad \text{WW} \end{array} \right]^{\text{alt}} = \{\text{LS}, \text{WW}\}
 \end{array}$$

- ii. *Wh*-phrases have no ordinary semantic value (Ramchand 1997; Beck 2006; Beck & Kim 2006).

- a. $[[\text{which boy}]]^o$ undefined

- b. $[[\text{which boy}]]^{\text{alt}} = \{x: x \text{ is a boy}\} = \{\text{LS}, \text{WW}\}$

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Thank you!