

Conjunct



Disjunct



Mixed



Negated disjunctive statements: the Italian perspective

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Disjunction under clause-mate negation

(Szabolcsi 2002, 2004)

II De Morgan law: $\neg(A \vee B) \Rightarrow (\neg A) \wedge (\neg B)$

English, Greek, Roumanian, Bulgarian, Korean

(1) John didn't order milk or coffee \Rightarrow

(2) John did not order milk AND John did not order coffee.
("CONJUNCTIVE INTERPRETATION")

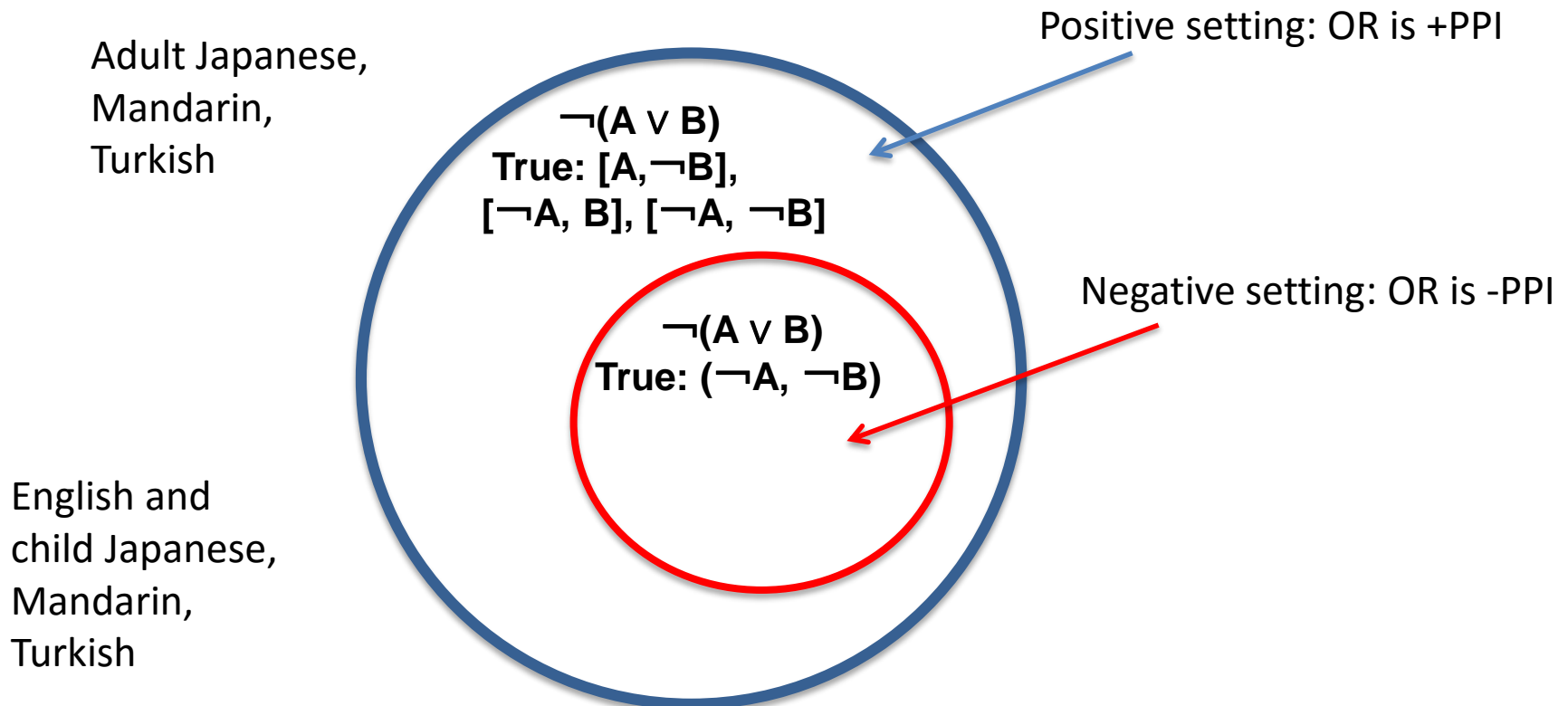
**Japanese, Mandarin, Hungarian, Italian, Turkish, Chinese, Russian,
Serbo-Croatian, Slovak, Polish, Hungarian**

(4) John didn't order milk or coffee \Rightarrow

(5) John did not order milk OR did not order coffee.
("DISJUNCTIVE INTERPRETATION")

Disjunction under clause-mate negation: The Semantic Subset Principle (Crain, Ni & Coway, 1994)

Crain (2012): OR is +PPI in Mandarin and -PPI in English



Japanese-speaking children (Goro, 2004; Goro and Akiba, 2004)

- TVJT, 30 children (Range age 3;7 - 6;3; mean 5;3) + 10 adults
 - *John didn't take the carrot or the pepper*

PERCENTAGE OF REJECTION

Context	Target sentence	% rejection (children)	% rejection (adults)
Didn't eat the carrot OR Didn't eat pepper $\neg A \vee \neg B$	Not [A or B] _s	75% (45/60)	0% (0/20)
Didn't eat carrot AND Didn't eat pepper $\neg A \wedge \neg B$	Not [A or B] _s	22% (13/60)	80% (16/20)

- Children's reason for rejection: "because the pig did eat one of the vegetables"; "because it is only one of the vegetables that the pig didn't eat".

(Chinese: Jing, Crain, Hsu, 2005; Russian: Verbuk, 2007; Turkish: Geckin et al., 2015)

Children vs. adults

- Japanese children adhere to De Morgan's law and assign a "conjunctive interpretation".
Japanese children = English children and English adults
- Japanese adults do not adhere to De Morgan's law and assign a "disjunctive interpretation".

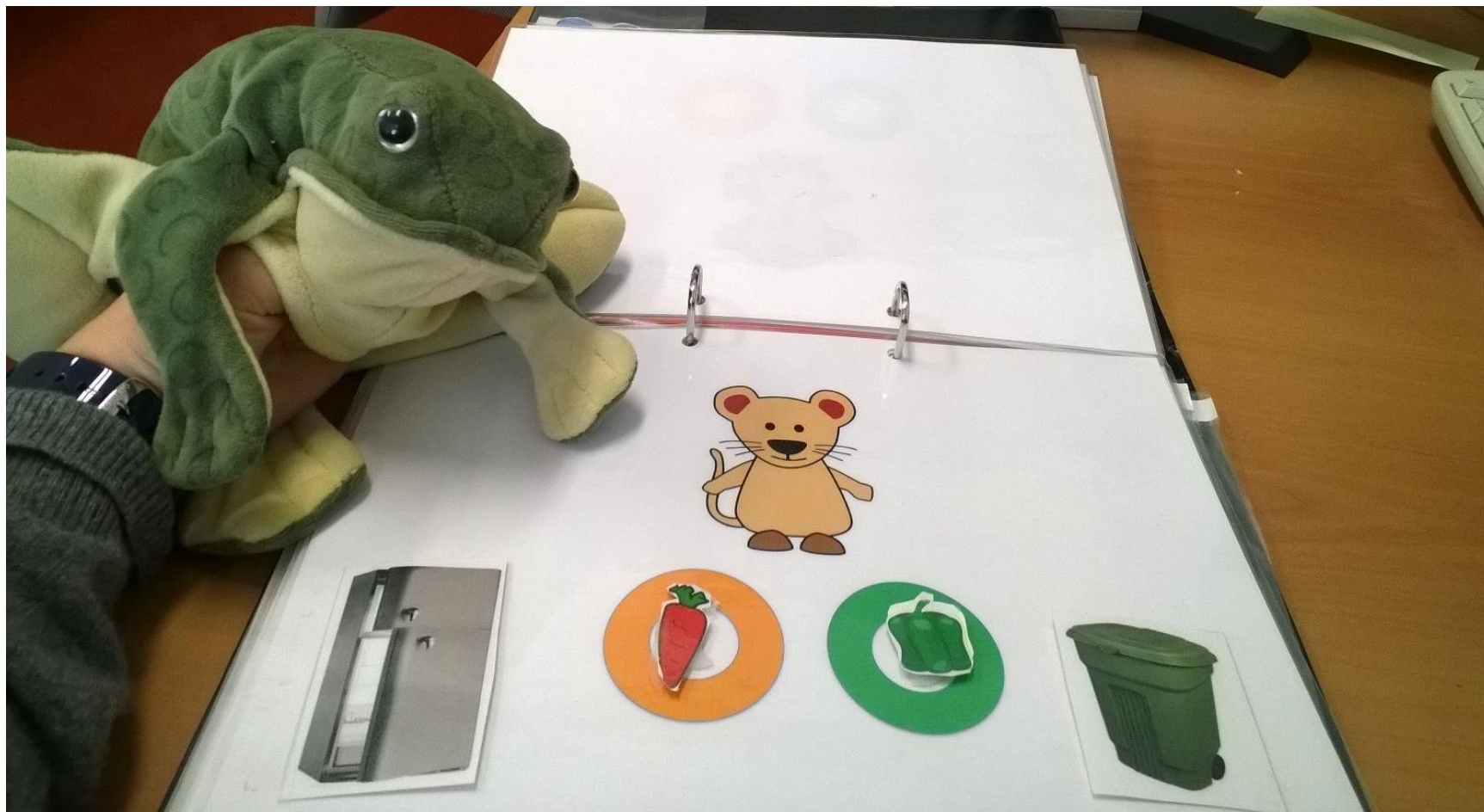
Study on Italian: Is OR +PPI?

What do adults do?

Regardless of adults, Italian-speaking children are predicted to initially analyze negation as taking scope over disjunction (- PPI)

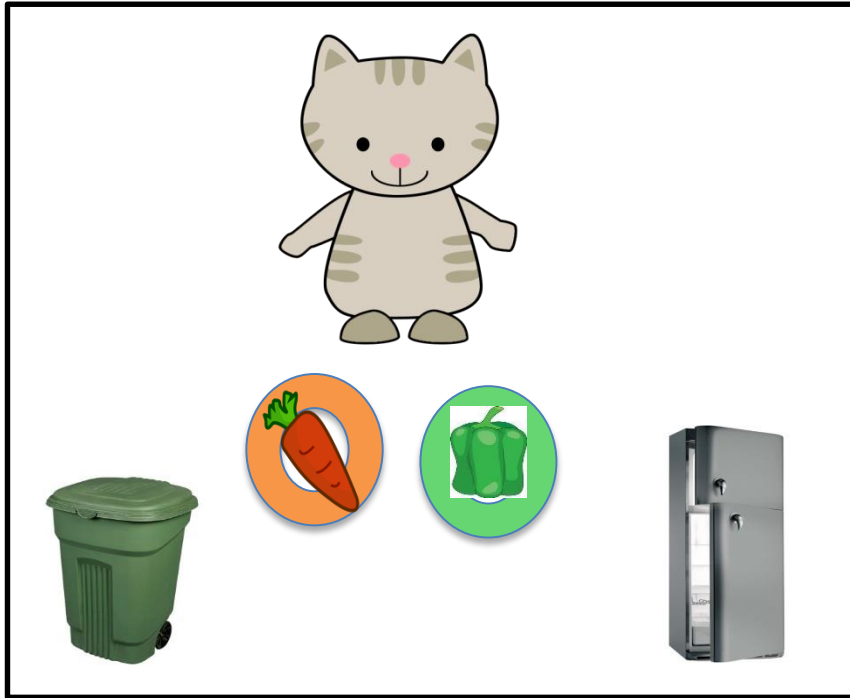
Method: Modeled on Goro's experiment

The experiment: TVJT



The experiment: TVJT

I part (story)



II part (TVJT)



Experiment

Conditions

- (1)a. Il gatto non ha mangiato la carota o/e il peperone.
b. The cat didn't eat the carrot OR/AND the green pepper.

2 + 2 Items

Context: the cat ate one of the vegetables, but not both/ silver medal).

2+2 Items

Context: the cat didn't eat both vegetables/sad face).

4 fillers (Sentence: Il gatto ha mangiato tutto; The cat ate everything/gold metal).

Predictions: if OR +PPI in adult Italian

- Silver medal condition : $\neg A \vee B$
 - Children should reject the sentence (OR –PPI)
 - Adults should accept it
- Sad face: $\neg A \vee B$
 - Children should accept the sentence (OR -PPI)
 - Adults reject (via implicature)

Predictions: if OR –PPI in adult Italian



- Silver medal condition : $\neg \mathbf{A}$ and \mathbf{B}
 - Children should reject the sentence
 - Adults should reject it
- Sad face : $\neg \mathbf{A}$ and $\mathbf{B} = \neg \mathbf{A}$ and $\neg \mathbf{B}$
 - Children should accept the sentence
 - Adults should accept the sentence

RESULTS

19 children (Range 4;7 – 6;0, mean age 5;2, SD 6,5) + 13 adults

5 children not included because they always responded 'yes'; 2 children did not understand the system of the rewards.

PERCENTAGE OF REJECTION

Outcome / Medal	Target sentence	%reject (children)	% reject (adults)
Didn't eat carrot OR Didn't eat pepper SILVER MEDAL CONDITION $\neg A \vee \neg B$ 	Not [A or B] _s	39,5 % (15/38)	0%
	Not [A and B] _s	95% (36/38)	92% (24/26)
Didn't eat carrot AND Didn't eat pepper SAD FACE CONDITION $\neg A \wedge \neg B$ 	Not [A or B] _s	34% (13/38)	100%
	Not [A and B] _s	0% (0/38)	0%

“OR” REJECTION OF SILVER MEDAL CONDITION

not A and B = neither hold

Children's reason for rejection:

“because the puppet said that he didn't eat this and this, but he ate only one”.

Japanese and Italian

Context	Target sentence	% rejection (children)	% rejection (adults)
Didn't eat the carrot OR Didn't eat pepper $\neg A \vee \neg B$	Not [A or B] _s	75% (45/60) JAP 39,5 (15/38) IT	0% (0/20) JAP 0% (0/26) IT
Didn't eat carrot AND Didn't eat pepper $\neg A \wedge \neg B$	Not [A or B] _s	22% (13/60) 34% (13/38)	80% (16/20) JAP 100% (26/26) IT

Children data

- Looking at individual performance in EXP I:
- Silver medal:
 - Adults: all accept
 - 10 children accept (like adults)
 - 6 children reject
 - 3 children mixed

Summary

Adult

“Disjunctive interpretation” → Italian is like Mandarin and Japanese

- (1) John didn't order a coke or a coffee.
- (2) John did not order a coke OR did not order a coffee.

Children

Divided into 2 groups:

- a group assigns a “conjunctive interpretation” (in line with the Semantic Subset Principle and according to De Morgan Law); (6 children)
- a group assigns a “disjunctive interpretation” and is adult-like. (10 children)
- «And» and «or» are distinct



Why are Italian children differently than Japanese or Mandarin children?

Is the presence of «and» and «or» in the same experiment affecting children's performance

- 16 adults
- 19 children (range 4;10 – 5;7, mean age 5;3, SD 3,03)
- Only «or», 4 items per condition (silver medal and sad face)

Language acquisition: Italian-speaking children

PERCENTAGE OF REJECTION

Outcome / Medal	Target sentence	% rejection (children)	% rejection (adults)
Didn't eat carrot OR Didn't eat pepper  $\neg A \vee \neg B$	Not [A or B] _s	50 %	8 %
Didn't eat carrot AND Didn't eat pepper  $\neg A \wedge \neg B$	Not [A and B] _s	41 %	79 %

Silver medal

Adults: 1 always reject



10 children accept and are adult-like

8 children reject

1 child mixed

Language acquisition: Italian-speaking children

PERCENTAGE OF REJECTION

Outcome / Medal	Target sentence	% rejection (children)	% rejection (adults)
Didn't eat carrot OR Didn't eat pepper $\neg A \vee \neg B$ 	Not [A or B] _s	50 % 39,5% EXP1	8 % 0% EXP1
Didn't eat carrot AND Didn't eat pepper $\neg A \wedge \neg B$ 	Not [A or B] _s	41 % 34% EXP1	79 % 100% EXP1

Silver medal

Adults: 1 always reject

10 children accept and are adult-like

8 children reject

1 child mixed

Summary

- SILVER MEDAL: adults data: OR is +PPI in Italian
- Children: one group of Italian children is adult like
- One group is adopting –PPI value for OR

ITALIAN VS. JAPANESE

Results of Italian speaking children are not as sharp as the results of Japanese speaking children.

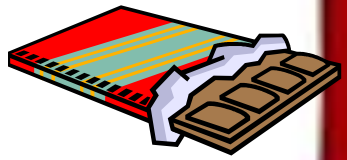
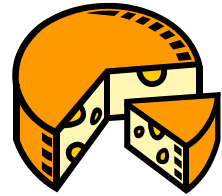
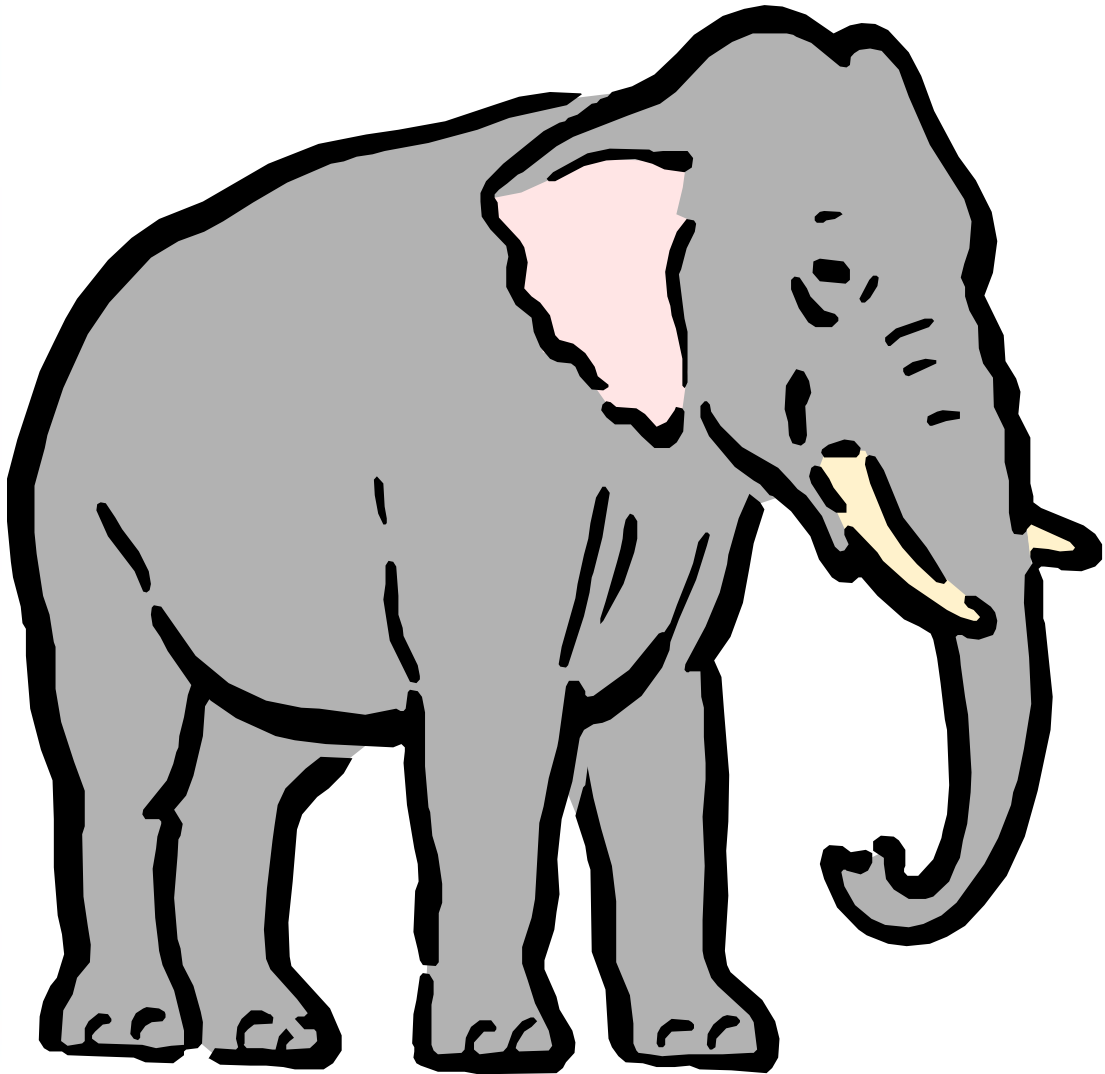
Possible explanations:

- ✓ Developmental explanation.
- ✓ Cross-linguistic difference, something peculiar about Italian.

We noticed a possible effect of
tense, which turned out to be
something else

Experiment with adults: $\neg A \vee B$

- Betting mode with past tense (20 adults)
- Prediction with future (21 adults)
- SET UP for the betting mode:
- Presentation of the relevant items and the possible actions
- Scenario hidden. Something happens.
- Bet on what has happened using the past
- «the child has not receive the orange or the melon»
- Display of the scenario. Verification

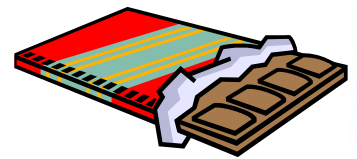
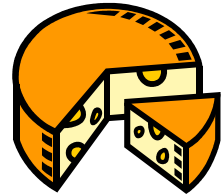
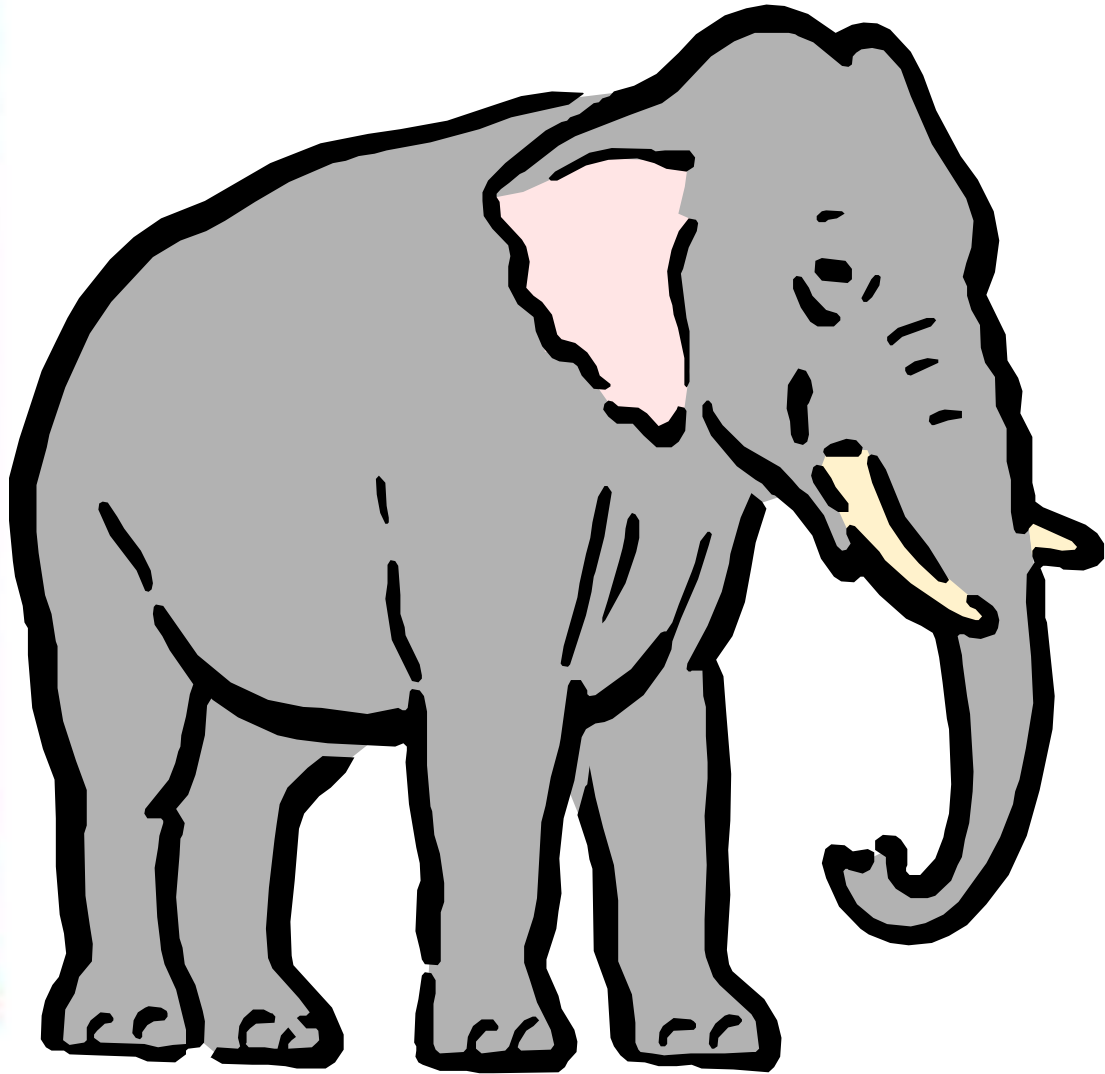


**Sta succedendo qualcosa
dietro al sipario...**

**(something is happening behind
the curtains..)**

The elephant has
not received
chocolate or nuts





Experiment with adults: $\neg A \vee B$

- SET UP for the prediction mode:
- Presentation of the relevant items and the possible actions
- Prediction using future: «the child will not receive the orange or the melon»
- Scenario hidden. Something happens
- Display of the scenario. Verification

Material and methods

- 20 adults for the prediction mode and 20 for the betting mode
- 6 items per conditions
 - 6 not **A** or **B** (silver medal)
 - 6 not **A** or **B** (sad face)

Outcome / Medal	Target sentence	% rejection Betting	% rejection Prediction
<p>Didn't eat carrot OR Didn't eat pepper</p> <p>Will not eat the carrot OR will not eat the pepper</p> <p>$\neg A \vee \neg B$</p>	<p>Not [A or B]_s</p>	<p>85%</p>	<p>72 %</p> <p>0% EXP1</p>
<p>Didn't eat carrot AND Didn't eat pepper</p> <p>Will not eat the carrot AND will not eat the pepper</p> <p>$\neg A \wedge \neg B$</p>	<p>Not [A or B]_s</p>	<p>7 %</p>	<p>23 %</p> <p>100% EXP1</p>

Discussion: adults

- The high rejection of «not A or not B» is not expected if OR + PPI
- But there are some intervention/licensing effects noticed by Szabolczi (2002)
- Janos nem hitva **fet/gyakran** Katit vagy Marit
- *John didn't always/often call Kati or Mary*
- **Not** > **always/often** > **or**
- Which holds for Italian:
- Gianni non ha **spesso** chiamato Katia o Maria
- One may assume that prediction or betting modes introduce another operator that shields OR

Another similar fact

- «Lui si era imposto di non leggere più **alcun** quotidiano o di ascoltare la radio» (from *L'ultimo custode* di Martigli 2013)
- *He obliged himself of not reading any newspaper or listening to the radio*
- **Not A and not B**
- «Lui si era imposto di non mangiare il gelato o di bere la birra»
- *He obliged himself of not eating ice-cream or drink bear*
- **Not A or not B**

Discussion: children

- Why many children are adults? Negative concord
- Il pupazzo **non** ha mangiato **né** la carota **né** il peperone
- The puppet didn't eat neg the carrot neg the pepper
- Not A and not B

- **Non** penso che Gianni parli inglese o tedesco
- *I don't think that J. speaks English or German*
- «I think that J. doesn't speak English or German»

- Not A and not B

- Penso che Gianni **non** parli inglese o tedesco
- *I think that J. doesn't speak English or German*
- «I think that J. doesn't speak English or German»

- Not A or not B

Conclusion

- Italian OR has the +PPI value
- There is evidence that some children start with OR having –PPI value (in compliance with the Subset principle)
- Cross-linguistic difference: negative concord is a trigger for +PPI
- OR can scope below negation if an operator shields it or some element needs to be licensed