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# Child disjunction across positive and negative contexts: Evidence from French

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### Positive disjunction (OR)

- Pragmatic reasoning: scalar implicature.
- (1) Liz drew the flower **or** the tree.  
= Liz drew **either** the flower **or** the tree.  
→ *Exclusive* reading.
- (2) a. **Generate AND alternative**  
Liz drew the flower and the tree.  
b. **Strengthening**  
Liz drew the flower or the tree...  
...but not both.
- Children's non-target readings of OR:
- (3) Liz drew the flower **and/or** the tree.  
→ *Inclusive* reading "and/or" [1].  
Failure to compute scalar implicature.
- (4) Liz drew the flower **and** the tree.  
→ *Conjunctive* reading "both" [7].  
i. Failure to generate AND alternative.  
ii. Conjunctive inference triggered by (i).  
(via an exhaustification mechanism)

### Aim of study

- No acquisition study has investigated children's range of interpretation for OR across contexts.
- Research question:  
To what extent are (non-)target interpretation patterns for OR and NOT-OR related within learners?
- Approach: test OR in both positive and negative contexts.
  - Same set-up and task.
  - Same participants.
- Language of interest: French.

### Hypotheses

- H1:** Two adult patterns: (1) *exclusive* with OR and NOT-OR; (2) *exclusive* OR and *neither* NOT-OR.
- H2:** Children who fail to generate scalar implicature in positive context will fail to generate scalar implicature in negative context (assuming +PPI OR).
- H3:** Children who fail to generate AND alternative in positive context (p AND q) will fail to generate AND alternative in negative context ( $\neg p$  AND  $\neg q$ ).

**Predict:** *Conjunctive* OR interpreters should only show *neither* readings in negative context (NOT-OR).

### Negated disjunction (NOT-OR)

- Cross-linguistic differences (PPI parameter)
- (5) Liz did **not** draw the flower **or** the tree.
  - Liz drew **neither** the flower **nor** the tree.
  - Either** Liz did **not** draw the flower **or** she did **not** draw the tree.
  - Liz did not draw the flower **and/or** the tree.  
→ *Not both* reading

| Neither (5a) (-PPI)                                  | Exclusive (5b) (+PPI)   |
|--|---|
| Dutch, English, Korean, German, Greek, Romanian, ... | <b>French</b> , Italian, Japanese, Russian, Mandarin Chinese, ... |

- Children:  
Preference for *neither* reading [5].  
→ Semantic Subset Principle [2].  
When UG makes available two readings in a subset-superset relation (e.g. *neither/not-both*), children initially assign the subset reading (*neither*).
- Adults: *neither* reading is in fact accessible even in *exclusive* languages [3].

### Selected references

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### Methods and materials

- Truth-Value Judgment Task in Prediction mode.
  - Satisfy ignorance inference [4].
  - Falsifiable disjunctive guess [6].
- Participants have to infer from the reward what Liz did and say whether the owl made the right guess or not.

**Participants:** native French speakers.

- 84 children (age = 3;6 – 8;5 |  $\mu$  = 6;3), 4 age groups.
- 77 adults (age = 18 – 67 |  $\mu$  = 28;2).

**Reward system**

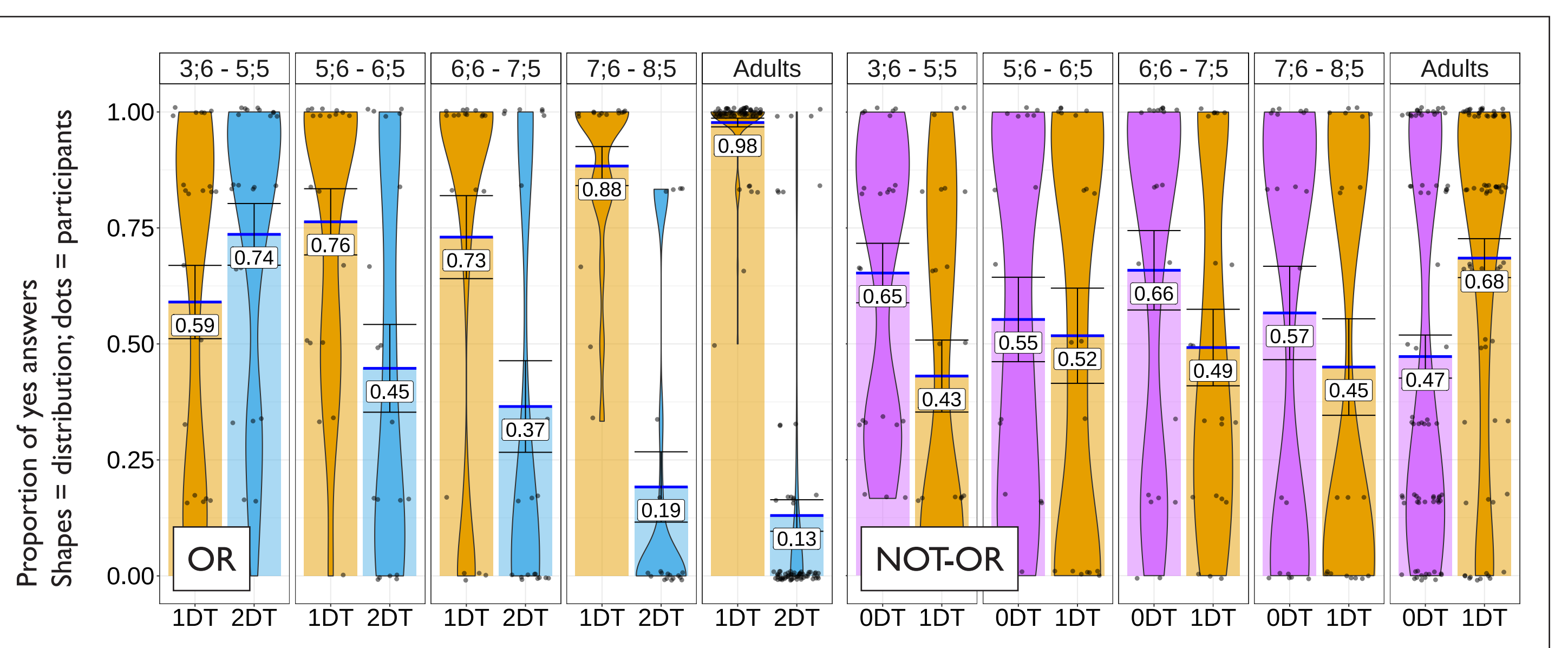
- 2 disjuncts true
- 1 disjunct true
- 0 disjunct true

**Sample test sentences:**

(6) a. OR Liz a colorié la fleur **ou** l'arbre.  
"Liz colored the flower **or** the tree."  
b. NOT-OR Liz n'a pas colorié la fleur **ou** l'arbre.  
"Liz did **not** color the flower **or** the tree."

### Results

- Systematic response patterns with OR and NOT-OR.  
Bimodal distribution with NOT-OR in adults and children.
- Age effect with OR.  
GMMs: Estimate = 2.20; std.error = 0.43; z = 5.11; Pr(>|z|) > .0001  
But not with NOT-OR.  
GMMs: Estimate = -0.46; std.error = 0.23; z = -1.94; Pr(>|z|) = 0.0518
- Unattested**, systematic **adult** and **non-adult** patterns.  
Strong criteria to categorize participants: accept 5/6 times a condition, and reject 5-6 others.



|             |             | NOT-OR patterns |          |         |         |
|-------------|-------------|-----------------|----------|---------|---------|
|             |             | Exclusive       | Not-both | Neither | Other   |
| OR patterns | Exclusive   | 20 (29)         | 0 (2)    | 9 (13)  | 10 (17) |
|             | Inclusive   | 0 (0)           | 1 (4)    | 5 (1)   | 4 (3)   |
|             | Conjunctive | 0 (0)           | 0 (0)    | 12 (0)  | 2 (2)   |
|             | Other       | 2 (2)           | 0 (2)    | 11 (0)  | 8 (2)   |

### Discussion

- Hypothesis 1:** validated across adults as well as children.
  - Adult pattern 1:** Idealized *exclusive* French
  - Adult pattern 2:** *Neither* French
- Hypothesis 3:** validated.  
*Conjunctive* interpreters only show *neither* readings.  
Two sources of *neither* readings:
  - +PPI OR and missing AND alternative.
  - PPI OR.
- Future research:** develop experimental paradigm that targets specifically knowledge of AND alternative.

**Hypothesis 2:** validated.  
Children either always calculate scalar implicature (SI) or do not.

|                | OR | NOT-OR                  |                  |
|----------------|----|-------------------------|------------------|
| Exclusive SI ✓ |    | Exclusive (+PPI / SI ✓) | <b>Adult 1</b>   |
|                |    | Not-both (+PPI / SI *)  | *                |
|                |    | Neither (-PPI)          | <b>Adult 2</b>   |
| Inclusive SI * |    | Exclusive (+PPI / SI ✓) | *                |
|                |    | Not-both (+PPI / SI *)  | <b>Non-adult</b> |
|                |    | Neither (-PPI)          | <b>Non-adult</b> |