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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, ...	French , 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 | μ = 6;3), 4 age groups.
- 77 adults (age = 18 – 67 | μ = 28;2).

Reward system

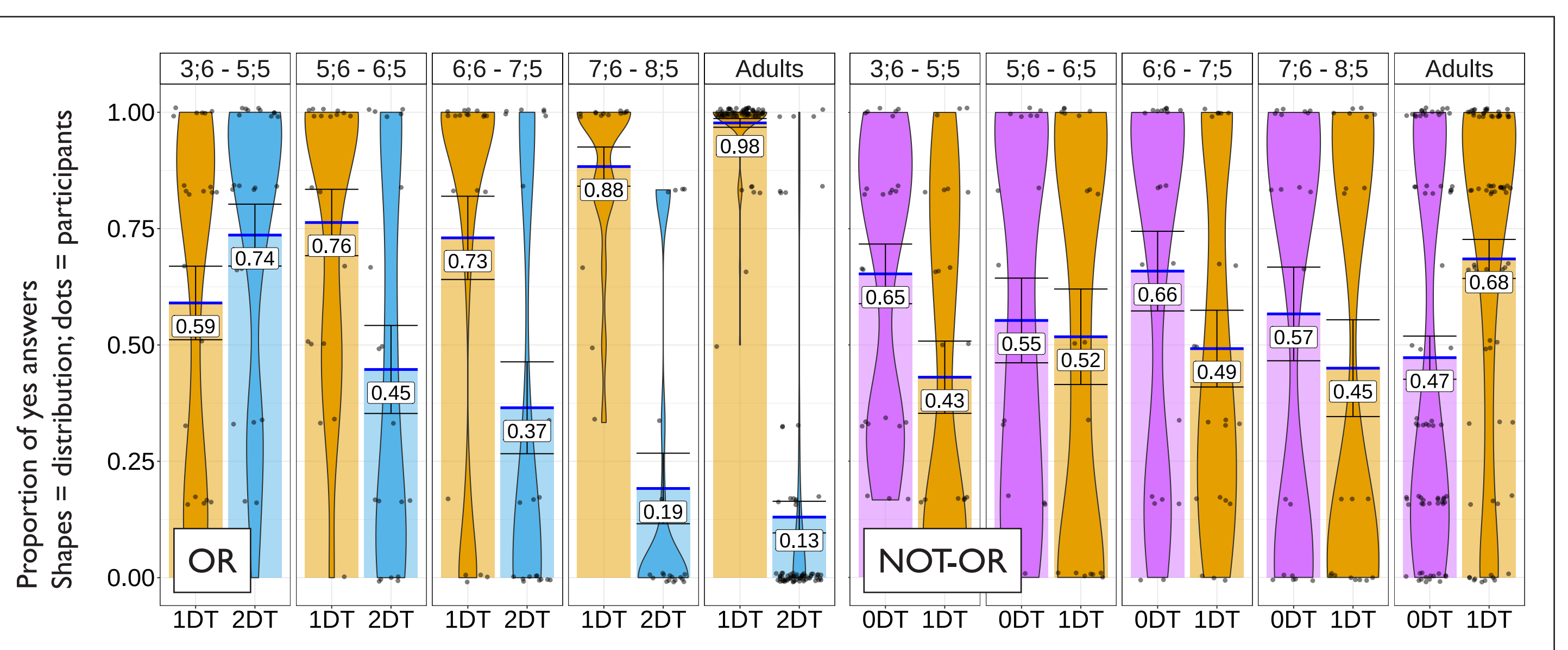
- 2 disjuncts true
- 1 disjunct true
- 0 disjunct true

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 ✓)	Adult 1
		Not-both (+PPI / SI *)	*
		Neither (-PPI)	Adult 2
Inclusive SI *		Exclusive (+PPI / SI ✓)	*
		Not-both (+PPI / SI *)	Non-adult
		Neither (-PPI)	Non-adult