

Non-syntactic constraints on syntactic alternations - L1 acquisition of French partial interrogatives by TD children

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French partial interrogatives can be produced with different word orders (Fig. 1). This phenomenon has long been studied from a syntactic perspective, with many works in language acquisition based on the concept of syntactic ‘derivational complexity’ (DCM, [5]). In DCM, in situ (IS) questions which follow the canonical declarative order are easiest and other variants are ranked in terms of how costly they are to produce/understand, with fronted+inversion (FINV) being most complex. Experimental as well as corpus data in French seem to support this hypothesis, with children often producing IS first (a.o. [11, 4, 6]). New experiments and corpus studies of adult spontaneous French ([9, 10]) put forth a more nuanced picture with sociopragmatic factors also at play. Usage of FINV is often associated with higher context formality. Social stereotypes such as richness, education, and French nativeness are projected by French listeners on people using this variant. The present study investigates whether sociopragmatic factors and stereotypes also weigh on child acquisition.

Method. With adult data as a baseline, we ran an adapted matched-guise task [7] where children listened to short audio stimuli and then chose on a computer screen between two drawings of people representing one of three contrasting stereotypes (*richness*: poor vs. rich; *education*: cashier vs. doctor; *hobby*: sports vs. reading) (Fig. 2). Children were told that they had to help scientists identify who had spoken.

Materials and procedure. 18 sentences were recorded by 4 French native speakers (2 male – 2 female). Each sentence was played three times across the experiment for each child, each time in a different syntactic condition (IS, F, FINV). For each trial, the child had to choose on a different stereotype, adapted to speaker’s gender. Combinations of stereotypes, syntactic variants and gender of speaker were balanced across items and lists.

Participants. 136 kindergarten and primary school children took part in the experiment (age 3-11), which lasted between 10 to 20 minutes depending on the child. Data collected about the children only consisted of their age, gender and class-group.

Results. Answers were either coded 0 (‘poor’, ‘cashier’, ‘sports’: left picture) or 1 (‘rich’, ‘doctor’, ‘reading’: right picture). To account for the expected variability among children, we submitted our data to binomial Bayesian regression models (*brms* R package, [8, 3, 2, 1]), with QUESTION, STEREOTYPE and CLASSGROUP as main predictors, and *children* and *items* as random factors. Main results are:

- an overall effect of QUESTION (Fig. 3), with F-interrogatives more likely than FINV to yield a ‘poor’/‘cashier’/‘sports’ choice ($\hat{\beta}=-0.15$, 95%CrI=[-0.59,0.32], $P(\hat{\beta})<0=0.74$).
- an interaction STEREOTYPE*QUESTION (Fig. 4). Compared to FINV, IS-sentences are less likely to yield a ‘highly-educated’ choice but more likely to yield a ‘rich’ choice ($\hat{\beta}=1.02$, 95%CrI=[-0.10,2.18], $P(\hat{\beta})>0=0.96$), in stark contrast with adult data. A followup study shows that children have different richness stereotypes than adults.
- an interaction CLASSGROUP*STEREOTYPE*QUESTION (Fig. 5). Higher education is associated with FINV even for the youngest children and it remains constant, while the association of IS and richness disappears with age ($\hat{\beta}=-0.17$, 95%CrI=[-0.55,0.21], $P(\hat{\beta})<0=0.81$).

Those findings illustrate the need for a broadening of the linguistic factors that should be taken into account in the study of how children acquire a syntactic alternation: not only syntax is relevant, but sociopragmatic considerations are as well. However, even the stereotypes have to be adapted to the children’s perspective.

In situ (IS)	Tu	regardes	qui ?
	S	V	Wh-Phrase
Fronting (F)	Qui	tu	regardes ?
	Wh-Phrase	S	V
Fronting + V/S order (FINV)	Qui	regardes-	tu ?
	Wh-Phrase	V	S
Who are you looking at?			

Figure 1: Main interrogative variants in French (SVO language)



Figure 2: Example item (text reads 'The voice is rather the voice of...' in French)

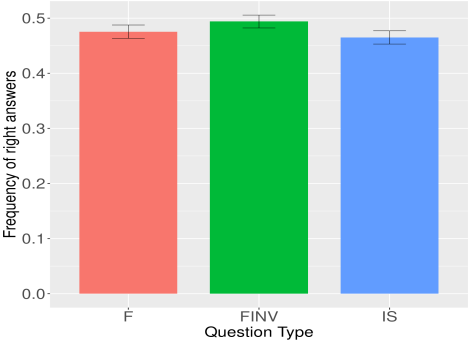


Figure 3: Overall results (lower frequency means more clicks on poor/cashier/sports)

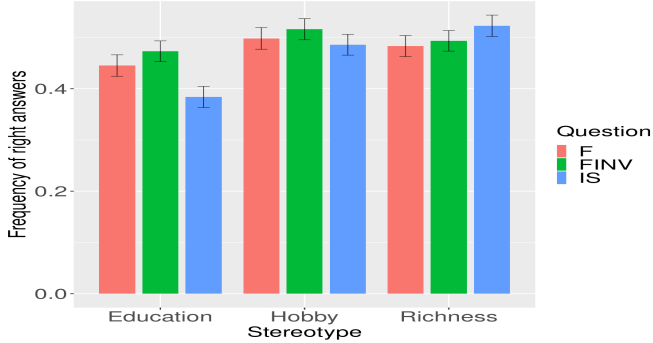


Figure 4: Answers by stereotype (lower frequency means more clicks on poor/cashier/sports)

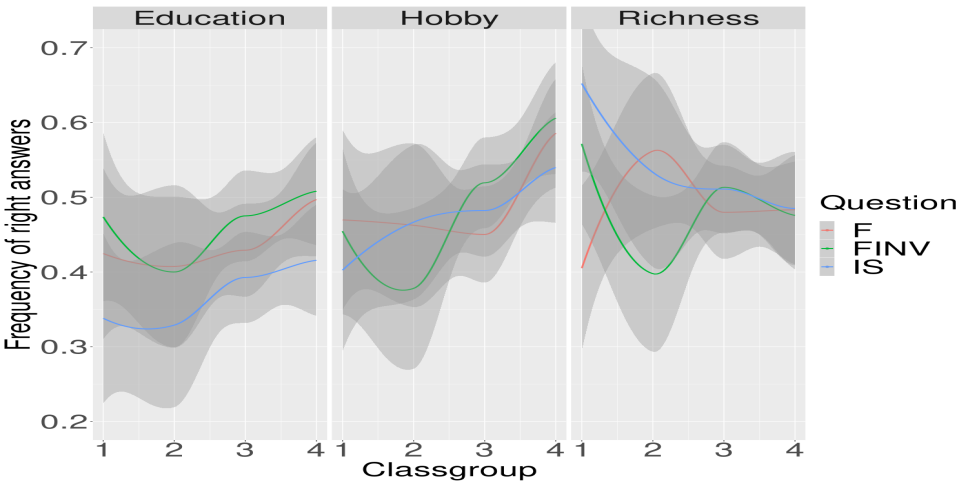


Figure 5: Answers by stereotype and as a function of classgroup (lower frequency means more clicks on poor/cashier/sports) (class1=3-5 y.o, class2=5-6 y.o, class3=6-10 y.o, class4=9-11 y.o)

References

- [1] P.-C. Bürkner. Advanced bayesian multilevel modeling with the r package brms. the r journal, 10 (1), 395–411. doi: 10.32614. Technical report, RJ-2018-017, 2018.
- [2] P.-C. Bürkner et al. brms: An r package for bayesian multilevel models using stan. Journal of Statistical Software, 80(1), 2017.
- [3] B. Carpenter, A. Gelman, M. D. Hoffman, D. Lee, B. Goodrich, M. Betancourt, M. Brubaker, J. Guo, P. Li, and A. Riddell. Stan: A probabilistic programming language. Journal of statistical software, 76(1), 2017.
- [4] C. Hamann. Speculations about early syntax: The production of wh-questions by normally developing french children and french children with sl. Catalan Journal of Linguistics, 5(1), 2006.
- [5] C. Jakubowicz. Measuring derivational complexity: New evidence from typically developing and sl learners of l1 french. Lingua, 121(3), 2011.
- [6] C. Jakubowicz and N. Strik. Scope-marking strategies in the acquisition of long distance wh-questions in french and dutch. Language and Speech, 51(1-2), 2008.
- [7] W. E. Lambert, R. C. Hodgson, R. C. Gardner, and S. Fillenbaum. Evaluational reactions to spoken languages. The Journal of Abnormal and Social Psychology, 60(1), 1960.
- [8] R. R Development Core Team et al. R: A language and environment for statistical computing, 2011.
- [9] G. Thiberge. Position du syntagme wh- en français : réelle optionnalité ou biais sociolinguistique ? ELIS - Échanges Linguistiques en Sorbonne, Université Paris Sorbonne, 5:64–91, 06/2018 2018.
- [10] G. Thiberge, F. Badin, and L. Liégeois. French partial interrogatives: a microdiachronic study of variation and new perspectives in a refined pragmatics framework. under review.
- [11] S. Zuckerman and A. Hulk. Acquiring optionality in french wh-questions: An experimental study. Revue québécoise de linguistique, 30(2), 2001.