Production and Comprehension of Wh-questions in the Acquisition of French: Comparing L2 Children and Children with SLI

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Comprehension > production : classical explanation = production requires greater mental computation (Lobley, Baddeley and Gathercole 2005)

Derivational Complexity Metric (DCM) (Jakubowicz 2005)

- Merging $\alpha_i$ n times gives rise to a less complex derivation than merging $\alpha_i$ (n + 1) times.
- Internal Merge of $\alpha$ gives rise to a less complex derivation than Internal Merge of $\alpha+\beta$.

Complexity and comprehension/production asymmetries

- Low complexity $\rightarrow$ no problem
- Excessive complexity $\rightarrow$ no (clear) distinction
- *Intermediate complexity $\rightarrow$ asymmetries will surface*
Background
Manipulation of production/comprehension asymmetries

- Varying the degree of syntactic complexity
  - Subj vs. Obj relatives, processing and working memory (Deevy & Leonard 2004; Adani 2008; Friedmann et al. 2009)

- Varying the processing capacity of subjects
  - Reduced in young children, aphasia, atypical development (Rizzi 2002; Grillo 2008; Jakubowicz 2005, to appear; Kohnert et al., in press)

Our study
- SLI – L2 comparison for French (Paradis and Crago 2000; Grüter 2005)
- Wh-questions in French and the DCM
  Expectations:
  - Preference for less complex strategies in production
  - Comprehension effects only for most complex constructions
## Background

<table>
<thead>
<tr>
<th>Number</th>
<th>French Expression</th>
<th>English Translation</th>
<th>Transformation</th>
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<tbody>
<tr>
<td>1.</td>
<td>Tu vas où ?</td>
<td>you go where</td>
<td>In situ</td>
</tr>
<tr>
<td>2.</td>
<td>Où tu vas ?</td>
<td>where you go</td>
<td>Plain Fronting</td>
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<td>3.</td>
<td>Où est-ce que tu vas ?</td>
<td>where ESK you go</td>
<td>Fronting + ESK</td>
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<tr>
<td>4.</td>
<td>Où vas-tu ?</td>
<td>where go you</td>
<td>Fronting + Clitic Inversion (I-to-C)</td>
</tr>
<tr>
<td>5.</td>
<td>Où va [ le prince ] ?</td>
<td>where goes the prince</td>
<td>Fronting + Stylistic Inversion</td>
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</table>
Method: Participants

19 British immigrant children living in France (L1 English-L2 French)

- 13 monolingual French-speaking children with SLI
  - Age: $9;4 (2;3)$, Range: 6;6 – 12;11
  - 17 TD 4-year-olds
  - 12 TD 6-year-olds
  - 12 Adults ($M = 22$)

<table>
<thead>
<tr>
<th></th>
<th>$M (SD)$</th>
<th>Range</th>
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<tbody>
<tr>
<td>Age</td>
<td>$9;9 (1;9)$</td>
<td>6;8 – 12;7</td>
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<tr>
<td>1st Exposure to French</td>
<td>$6;10 (1;8)$</td>
<td>4;3 – 9;10</td>
</tr>
<tr>
<td>Length of Exposure to French</td>
<td>$2;10 (1;0)$</td>
<td>0;11 – 4;6</td>
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</table>
Method: Participants

Standardized Scores for French

- Phonology (Word Rep.)
- Morphosyntax (Sentence Compl.)
- Lexicon (Receptive Vocab.)

<table>
<thead>
<tr>
<th></th>
<th>SLI</th>
<th>L2</th>
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<tr>
<td>ns</td>
<td>-8</td>
<td>-6</td>
</tr>
<tr>
<td>-2</td>
<td>-4</td>
<td></td>
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<tr>
<td>0</td>
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</tbody>
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Standardized Scores for English (L1)

- Global Score CELF-4: -.69 (SD 1.3)
- 9 children < -1 SD
- 4 of which ≤ -1.5 SD
**Method: Materials**

**Experimenter:** Le lapin pousse quelqu’un, mais on ne voit pas qui. Demande-lui.

*(The rabbit is pushing someone, but we can’t see who. Ask him.)*

54 Wh-Question Items
- 12 Subject-who *Qui*
- 12 Object-who *Qui*
- 12 Object-what *Quoi/que*

(18 Adjunct wh-questions)

**Possible Expected Answers:**

Tu pousses *qui* ?  
*Qui* tu pousses ?  
*Qui* est-ce que tu pousses ?  
*Qui* pousses-tu ?

In situ  
Plain Fronting  
Fronting + ESK  
Fronting + Clitic Inversion

Jakubowicz 2005, adaptation of an experiment designed by N. Friedmann
Experiment: Voilà un roi, une princesse et une sorcière. Dis-moi: Qui est-ce qui filme le roi?

Here is a king, a princess and a witch.
Tell me: Who is filming the king?

72 Wh-qui ‘who’ Question Items
12 Wh-Subject in situ / Plain fronting
12 Wh-Subject with est-ce que
12 Wh-Object in situ
12 Wh-Object with Plain Fronting
12 Wh-Object with est-ce que
12 Wh-Object with Fronting & Stylistic Inversion

Jakubowicz 2005, adaptation of an experiment designed by N. Friedmann
Results – Wh fronting vs. in situ

Production

- Wh-fronting: SLI < L2 < TD-4 < TD-6
- Wh-fronting vs. in situ:
  - SLI & L2: in situ = fronting
  - TD4/6 & adults: fronting > in situ

Comprehension

- Wh-fronting: SLI=L2=TD-4=TD6
- High performance for both wh-fronting and wh in situ
Results – Fronting strategies (in object questions)

Production

- Fronting strategies:
  - Plain fronting preferred: SLI/L2 < TD-4/6
  - ESK: SLI < L2 < TD-4/6

- Inversion:
  - TD-4 < L2 < SLI < TD-6

Comprehension

- Plain fronting & ESK: high performance; SLI and L2 similar to TD groups
- Low performance on fronting + styl. inversion in all groups (adults: 82%)
Results – Subj./Obj.: Plain fronting

**QSubj:** Qui (__) pousse le lapin?  
‘Who is pushing the rabbit?’

**QObj:** Qui le lapin pousse(__)?  
‘Who is the rabbit pushing?’

**Production**

- QSubj: High rate of wh- in 1st position (ambiguous: in situ or fronting)
- QObj: Infrequent fronting in SLI & L2

**Comprehension**

- High performance for both QSubj and QObj
Results – Subj./Obj.: Fronting + ESK

QSubj: *Qui est-ce qui ___ pousse le lapin?* ‘Who is pushing the rabbit?’

QObj: *Qui est-ce que le lapin pousse ___?* ‘Who is the rabbit pushing?’

**Production**

- Plain fronting + ESK not used much

**Comprehension**

- High performance on Plain fronting + ESK in both QSubj. and QObj.
Discussion

Wh-fronting versus wh-in situ

- Wh-fronting involves greater computational complexity than wh-in situ (DCM)

- **BUT** this surfaces only in choice of strategy in production, precisely in both populations in which limited processing is hypothesized (SLI and L2)

- In comprehension, in general, wh-in situ and fronted wh are equally well understood

Mental computation involved in language comprehension is less than in production
Discussion

- In subjects with even more limited processing capacities, asymmetry between wh-fronting and wh-in situ can be found in comprehension:

  van der Meulen (2004):
  - French-speaking Broca’s aphasics
  - Comprehension of object questions: in situ > fronting
Discussion – Styl. Inversion

Qui est-ce que __ filme le prince  ‘Who is the prince filming?’

Frauenfelder et al. (1980): Reversible (1-2) and nonreversible (3-4) relatives

1. Le savant [qui connaît le docteur] travaille dans une université moderne
   ‘The scientist who knows the doctor works in a modern university.’

2. Le savant [que connaît le docteur] travaille dans une université moderne
   ‘The scientist who the doctor knows works in a modern university.’

3. L’éditeur [qui publie la revue] demande beaucoup de rigueur dans les articles
   ‘The editor who publishes the journal requires much precision in the articles.’

4. Les articles [que publie la revue] demandent une lecture attentive
   ‘The articles that the journal publishes require attentive reading.’
Discussion

Same effects in SLI kids and L2 kids

- In production strategies:
  - High rates of wh-in situ
  - Very little inversion

- In comprehension:
  - Equally high performance for both wh-in situ and wh-fronting (with or without ESK)
  - Significantly lower performance on wh-fronting with stylistic inversion
Merci !
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References

References

SLI group: Individual strategies (non-subject questions)
Production

L2 group: Individual strategies (non-subject questions)
TD-4 group: Individual strategies (non-subject questions)
TD-6 group: Individual strategies (non-subject questions)
SLI group: Production: Individual strategies (QOa)