Bilingual processing of grammatical gender

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Introduction
Grammatical gender: morphosyntactic cue to predict upcoming information during sentence processing

- Monolingual children make anticipations based on gender of the article (Lew-Williams & Fernald, 2007)
- Anticipation abilities related to word reading skills in monolingual children (Mani & Huetting, 2014)
- Bilingual adults show less efficient processing of gender than monolinguals (e.g., Lew-Williams & Fernald, 2010)
- Transfer effects due to gender incongruency in bilingual adults (Morales et al., 2016)
- Cross-linguistic influence is related to amount of input (e.g., Unsworth et al., 2014)

Investigate online processing of grammatical gender and its relation to reading in German-Italian bilingual children resident in Italy and Germany

Research questions
1. Do Italian-German bilingual children make linguistic anticipations on the basis of grammatical gender?
2. Is there cross-linguistic influence when two languages have the opposite gender?
3. Is anticipation ability related to reading skills?
4. What is the effect of language dominance?

Hypotheses and predictions
1. **Children process speech incrementally**
   - increase looks to target at onset of the article in predictable condition
2. **Gender incongruency leads to cross-linguistic influence**
   - delayed anticipation when German and Italian nouns have opposite gender
3. **Anticipation skills are positively related to reading**
   - reading fluency scores predict anticipation
4. **Language dominance influences anticipation abilities and the likelihood of transfer**
   - stronger anticipation patterns in dominant language
   - language incongruency effect more likely when tested in least dominant language

Methods
Participants

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Age range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Italian-German bilinguals</td>
<td>46</td>
<td>7.4 – 9.2</td>
</tr>
<tr>
<td>resident in Italy</td>
<td></td>
<td>(M = 8.5)</td>
</tr>
<tr>
<td>Italian-German bilinguals</td>
<td>40</td>
<td>7 – 9</td>
</tr>
<tr>
<td>resident in Germany</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italian monolinguals</td>
<td>40</td>
<td>7 – 9</td>
</tr>
<tr>
<td>German monolinguals</td>
<td>40</td>
<td>7 – 9</td>
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</tbody>
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Visual world eye-tracking experiment
Italian: *Dov’è la/il …?*
German: *Wo ist die/der ...?*
‘Where is the ...?’

Preliminary results
21 Italian-German bilinguals resident in Italy, tested in Italian

**Figure 1.** Predictable/Congruent
- la [fem] fragola
- il [masc] fungo
- die [fem] Erdbeere
- der [masc] Pilz

**Figure 2.** Predictable/Incongruent
- la [fem] topo
- la [fem] farfalla
- die [fem] Maus
- der [masc] Schmetterling

**Figure 3.** Unpredictable/Congruent
- la [fem] carota
- la [fem] candela
- die [fem] Möhre
- der [masc] Kerze

**Figure 4.** Proportion of looks to the target (vs. competitor) in the three auditory regions (where is / the / strawberry?)

Significant interaction between condition (predictable/unpredictable) and auditory region (intro/determiner) ([Est = .441998, SE = .018582, z = 23.79, p < .001]. **→** anticipation based on gender

No significant effect of gender incongruency across languages

But strongly Italian-dominant
M standard score Italian PPVT: 108 (SD = 12)
M standard score German PPVT: 73 (SD = 10)

To be continued ...

- Cross-linguistic influence only in least dominant language?
- Comparison with:
  - German-dominant bilinguals in Germany
  - Italian and German monolingual controls
- Positive correlation between linguistic anticipation and reading abilities?
  - In both languages?
  - Also across languages?

References