Speech and feeding development: A longitudinal study on Quebecois French-speaking children between 8 and 14 months.

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Introduction

- Masticatory and language skills develop concomitantly during the first year of life.
- Clinical, anatomical and phylogenetic findings suggest an interaction between feeding and language development (Palladino, Cunha & Souza, 2007; Malas et al., 2015; MacNeilage, 1998).
- Speech and chewing development:
  - Motor activities characterized by rhythmic jaw oscillation (mouth opening-closing alternation).
  - Mandibular rhythm acceleration (MacNeilage, 1998; Wilson & Green, 2009).

Objective: Investigate the mandible temporal patterns evolution during nutrition and speech between 8 and 14 months.

Method

- Participants:
  - 4 Canadian-French-speaking children (2 females and 2 males).
  - Longitudinal study (8, 10, 12, and 14 months of age).
  - Typical development: born at term, no neurological, physical or oro-motor impairments and no clinical history of eating disorders.

- Material & Procedure:
  - Audio and video recordings in a soundproof room.
  - Speech: Spontaneous productions (vocalizations, babbling).
  - Feeding: Standardized administration and textures (semi-solid, cracker, puree, solid) from the Schedule for Oral-Motor Assessment (Skuse, Reilly & Wolke, 2000).

Results

- Data analysis (Table 1):
  - Syllable duration (Praat software): consonant-vowel type
  - Chewing cycle duration (Datavyu software) for semi-solid (e.g. green peas, banana, cheddar) and crackers textures.

<table>
<thead>
<tr>
<th>Participant</th>
<th>6 months</th>
<th>8 months</th>
<th>10 months</th>
<th>12 months</th>
<th>14 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant 1</td>
<td>106</td>
<td>58</td>
<td>62</td>
<td>54</td>
<td>66</td>
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<tr>
<td>Participant 2</td>
<td>50</td>
<td>39</td>
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<td>50</td>
<td>94</td>
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<td>28</td>
<td>34</td>
<td>71</td>
<td>54</td>
<td>65</td>
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<tr>
<td>Participant 4</td>
<td>54</td>
<td>72</td>
<td>51</td>
<td>61</td>
<td>61</td>
</tr>
</tbody>
</table>

Table 1: Number of syllables and chewing cycles per participant for each session.

Discussion

- Despite large inter-individual differences, preliminary results show a syllable duration decrease as well as a decrease of chewing cycle duration between 8 and 14 months of age.
- There is a large distinction between chewing temporal patterns and speech temporal pattern from 8 months of age.
- This great difference found between chewing cycle duration and syllable duration leads us to believe about a mandible temporal patterns specification activity from an early stage of development.
- Further in-depth analyzes will be needed to explain clinical findings and to determine in which way mastication and speech development can interact with each other.
- To support these results, a cross section study carried out with a larger sample and completed by kinematics measures is in progress.

References: