Auditory-visual Perception of VCVs Produced by People with Down Syndrome: a Preliminary Study
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Auditory-visual Perception of VCVs Produced by People with Down Syndrome: a Preliminary Study

**Context**

ComEns research project
"Communiquons Ensemble" (Communicating together): Co-construction of the communicative space between people with Down Syndrome and ‘ordinary’ people

- website (under translation): www.communicuonsensemble.com

**Purpose**

- Evaluate the intelligibility of speech produced by people with Down Syndrome (DS)
- Analyse AV integration and compare with ‘ordinary’ speakers

**Background**

- Lack of studies of speech intelligibility of people with DS, especially quantitatively
- No studies on AV perception of speech produced by people with DS: can the visual modality improve speech intelligibility?

**Methods**

**Material**

- **Speakers:**
  - 2 with DS (1f) & 2 ‘ordinary’ (1f)
  - native speakers of French

- **Speech material:**
  - 16 Vowel-Consonant-Vowel (VCV) sequences
    - V=/a/
    - C: 16 French consonants (covering places and manners of articulation of French)

- **Recordings:**
  - AV stimuli construction:
    - addition of Cocktail Party Noise (SNR = -4dB)

- **Within subject factors:**
  - modality (A vs V vs AV)
  - speaker group (DS vs ‘ordinary’)

- **Between subject factor**
  - modality presentation order

**Analysis**

- **Conclusions**
  - Reduced auditory only speech intelligibility for speech produced by people with Down Syndrome (DS)
  - No difference in visual speech intelligibility: it is not more difficult, at least for our speakers, to lipread speech produced by a person with DS than that produced by an ‘ordinary’ person
  - No real difference in auditory-visual speech intelligibility
    - The visual speech information is not degraded in the speech of our two speakers with DS and seems to compensate for the degradation of the acoustic information.
  - The most frequent errors are confusions of the consonant with another consonant.
  - Confusion trees: the difference between groups is mainly observed for auditory perception.
  - It is more difficult to perceive the voiced/unvoiced feature in speech produced by people with DS.
  - Perception of vowels: the first vowel is significantly more often not perceived in the speech of people with DS
  - People with DS have difficulties producing initial vowels.

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