Abstract

- Many hard-of-hearing children (HI) show delays or disorders in the acquisition of morphosyntax.
- These difficulties are connected to problems in the auditory domain. (e.g. McCauley & Henry 2007)
- The new FinkKon-Test evaluates the ability to discriminate consonants that function as suffixes in the German verbal inflectional system.
- A pilot study reveals significant lower discrimination scores in the HI group compared to typically developing (TD) children.

Context

- Most HI children (HI) have a sloping hearing threshold.
- They have more difficulties to perceive high pitched consonants (e.g. [s] and [t]) than low pitched consonants (e.g. nasals)
- The coronal consonants [s], [t] and [n] mark in German.
- There are two test blocks with 11 test items.
- Test items are minimal pairs contrasting in the word-final position.
- Eight monosyllabic word pairs are differing in /s/, /t/, or /n/ resp. /n/ in the syllable offset.
- Three disyllabic word pairs are differing in -en and -ei in the second syllable.
- Words are part of children’s lexicon (countable nouns that can be easily depicted).

Aim of the study

Development of a new perception test to evaluate the phonological base of the acquisition of German verbal morphology for children from the age of three onwards.

The FinkKon-test (Finale-Konsonanten-Test – “final consonants test”)

Methods

- The FinkKon-test is constructed as a picture-word-matching task.
- Test words are replayed as audio files (65 dB).
- Subjects are presented with a picture triplet.
- They have to point out the word they hear.
- Reactions are video-taped and recorded on paper during the session.

Subjects

- 22 Hearing impaired (HI) children:
  - 11 three year olds (3;2-3;10)
  - 11 four year olds (4;2-4;11)
  - Moderate sensorineural hearing loss (38-78 dB)
  - Monolingual German, no sign language input
  - No other physical or cognitive impairments
- 15 Typically developing (TD) children:
  - 7 three year olds (3;1-3;11)
  - 8 four year olds (4;1-5;0)
  - Monolingual German
  - No physical or cognitive impairments

First testblock

- Each triplet depicts the test item and two distractors:
  - Test item 10: [huːn] (chicken)
    - Phonological distractor: [huːt] (hat)
    - Unrelated distractor: [haus] (house)

Second testblock

- Here, the other part of a minimal pair serves as item:
  - Test item 15: [huː] (hat)
    - Phonological distractor: [huːn] (chicken)
    - Unrelated distractor: [haus] (house)

Results

Significant differences in all categories: TD vs. HI

Age effect

Correctness scores increase significantly with age in TD and HI children

Discrimination between obstruents and nasals

<table>
<thead>
<tr>
<th>/n/ vs. /n/</th>
<th>/s/ vs. /f/</th>
<th>/n/ vs. /m/</th>
</tr>
</thead>
<tbody>
<tr>
<td>TD: 96%</td>
<td>HI: 65%</td>
<td></td>
</tr>
<tr>
<td>e.g.: [voːst] (sausage) vs. [vuːsm] (worm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>/s/ vs. /t/</td>
<td>/n/ vs. /n/</td>
<td></td>
</tr>
<tr>
<td>TD: 82%</td>
<td>HI: 50%</td>
<td></td>
</tr>
<tr>
<td>e.g.: [haut] (skin) vs. [haus] (house)</td>
<td></td>
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</tr>
</tbody>
</table>

Factors within the HI group

- Significant correlations (Pearson’s r)
  - % Choice of (unaided) hearing level: 100%
  - Aided hearing level: 85%
  - Age of hearing aid supply: 65%
  - Duration of hearing aid use: 45%
  - IQ*: 35%

- Unaided hearing level is the only factor that correlates with problems in the phoneme discrimination task
- Children having general problems with the FinkKon-test only reach low results in the IQ-Test (due to cognitive reasons or overall test performance problems)

Summary & Discussion

- HI children have problems discriminating coronal consonants in word-final positions.
- Test results correlate with the unaided hearing level.
- Since these affixes also serve as subject-verb-agreement-markers in German, we might expect deficits in the acquisition of the s-v-agr paradigm.
- The FinkKon-test allows to investigate the impact of auditory restrictions on the acquisition of verb-morphology.

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References


The FinkKon-test serves as a tool in research and clinical work to investigate the phonological base for the acquisition of German verb morphology in HI children.