Asymmetrical intelligibility of closely related languages

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Intelligibility
Types of speech:

- spontaneous conversations
- read texts
- isolated words
Measuring intelligibility

Methods:

› open questions
› multiple choice
› translations
› ...

rijksuniversiteit groningen
Explaining factors

- non-linguistic (e.g. attitude, contact)
- linguistic (distances)
Explain the factor: attitude

How do you like the Danish language?
beautiful  □ □ □ □ □ □  ugly

How do you like the Danes?
kind  □ □ □ □ □ □  unkind

Would you like to live in Denmark?
yes □  maybe □  no □
Explaining factor: attitude

- It is plausible that attitudes play a role in intelligibility.
- Still statistic relationships have hardly been found.
- The test situations are likely to block attitudes.
Explaining factor: contact

I watch Danish TV...
  once a week □
  once a month □
  once a year □
  less often □

I meet Danes...

I am in Denmark...
Explaining factor: contact

- It is plausible that contact plays a role for intelligibility
- Still statistic relationships have hardly been found
- Scandinavians have little contact
Levels:

- syntactic
- morphological
- prosodic
- phonetic
- lexical
Explaining factor: phonetic distance

**Levenshtein-algoritme:**

- Measures the phonetic distances between related language varieties
- Compares the sounds of cognate word pairs
- Counts how many sounds must be substituted, added or removed in order to change the sound of one word into the sounds of another word
Example Levenshtein-distance:

Danish *ligne* vs. Swedish *likna* ‘be like’:

\[
\begin{array}{c}
| l | i : | n | \varepsilon \\
| l | i : | k | n | a \\
| 1 | 1 | 1 \\
\end{array}
\]

\((1+1=2)/5 = 40\% \text{ difference}\)
Explaining factor: lexical distance

Percentage of non-cognates

Example non-cognates:
 › Danish *pige* vs. Swedish *flicka* ‘girl’
Gooskens & Beijering (2007)

**Material:**
- recordings of the fable ‘The North Wind and the Sun’
- 18 Scandinavian varieties
Intelligibility of Scandinavian varieties among Danes
Listeners:
› 18 groups of pupils between 15 and 19 years from Copenhagen

Task:
› translate into Standard Danish
Intelligibility of Scandinavian varieties among Danes

\[ r = .86 \]
Intelligibility of Scandinavian varieties among Danes
Asymmetric intelligibility
Mean results Danish-Norwegian


![Bar chart showing intelligibility of spoken and written Danish for Norwegians and Norwegian for Danes.](chart.png)
Mean results Swedish-Norwegian


![Graph showing intelligibility for spoken and written Swedish and Norwegian for Swedes and Norwegians]
Norwegians have experience with linguistic variation:
- strong position of dialects in Norway
- two written languages

Can this be an explanation for the fact that they understand Danish and Swedish so well?

Repetition of Danish dialect experiment in Norway

Hypothesis:
Norwegians understand closely related varieties better than Danes and Swedes
Linguistic experience
Linguistic experience

% correctly translated words vs phonetic distances in %

Stockholm, Lidköping, Oslo, Kvarn, Gaular, Hjordkær, Helsinki, Grytinge, Tromsø, Trysil, Fyresdal, Bjørgen, Rana, Oppdal, Storliden, Torshavn
1. lexical
2. orthographic
3. articulatory
1. Lexical asymmetry

‘room’

Swedish  Danish
rum         rum
værelse
1. Lexical asymmetry

Gooskens (2007)

![Bar graph showing the percentage of non-cognates in Swedish for Danes and Danish for Swedes. The graph shows that Danish for Swedes has a higher percentage of non-cognates.]
2. Orthographic asymmetry

<table>
<thead>
<tr>
<th>Danish</th>
<th>Swedish</th>
<th>Swedish Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>tikke</em></td>
<td><em>ticka</em> [tɪkːə]</td>
<td>‘tick’</td>
</tr>
<tr>
<td><em>hånd</em></td>
<td><em>hand</em> [hænd]</td>
<td>‘hand’</td>
</tr>
</tbody>
</table>
2. Orthographic asymmetry

Doetjes & Gooskens (2007)

› Correlation between intelligibility of 100 frequent Swedish word by Danish listeners and phonetic distances: $r = .54$

› Corrected for orthography: $r = .64$
3. Articulatory asymmetry

Observations:

- Danes seem to make a smaller effort to make themselves understood than Swedes
- Danish children score lower on vocabulary comprehension than Swedish children (Bleses e.a. 2004)

→

Hypothesis:
Danes have greater difficulty understanding their own language than Swedes
3. Articulatory asymmetry

Experiment Gooskens, Van Heuven & Van Bezooijen (spring 2008):
Intelligibility of their own language by Swedes and Danes

**Stimulus material:**
› isolated words
› read sentences
› spontaneous sentences

**Manipulations:**
› descending amount of babble noise, from almost unintelligible to intelligible:
3. Articulatory asymmetry

**Listeners:**
› Swedes and Danes

**Task:**
› listen to 4 versions in own language
› write down in own language
3. Articulatory asymmetry

![Graph showing the amount of noise versus the percentage of correct words for Swedes and Danes.](image)

- **Amount of noise**
  - 1
  - 2
  - 3
  - 4

- **% correct words**
  - 0
  - 10
  - 20
  - 30
  - 40
  - 50
  - 60
  - 70
  - 80
  - 90
  - 100

- **Legend**
  - **version**
  - **Swedes**
  - **Danes**
Plans

- differences on different linguistic levels
- more explanations for asymmetry
- other language pairs