The role of salience in Second Dialect Acquisition

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Definitions

• Second Dialect Acquisition
  – Acquisition of a vernacular variety outside the home environment and chronologically later than the acquisition of the standard variety, which is acquired at home.

• Salience
  – “a property of a linguistic item or feature that makes it in some way perceptually and cognitively prominent” (Kerswill and Williams 2002: 81)
Role of salience in SDA

• Auer, Barden, & Grosskopf (1998):
  – Salient features behave differently in dialect levelling vs. dialect acquisition: given up first in dialect levelling but acquired first in dialect acquisition (cf. Bergman 1964; Löffler 1974; Hinskens 1986).

• Almost no empirical data to confirm this statement (except of Auer 1997; Rys 2007; Wilson 2011).
Factors related to salience

- **Trudgill (1986):** long-term dialect accommodation of speakers of British English to American English.
  - Awareness/stigmatization
  - Phonetic distance
  - Phonemicity

  - Frequency
  - Areal distribution
  - Social acceptance
  - Speaker awareness
  - Complexity
Factors related to salience


  - Phonetic distinctness/distance
  - Continuous vs. dichotomous variables
  - **Lexicalization**
  - **Phonemicity**
  - **Areal distribution**
Factors related to salience

• **Lexicalization**: distinction between lexicalized (i.e., word dependent) dialect features and rule-governed features.

• Schirmunski (1930): lexicalized features are more salient than rule-governed features.

• Auer et al. (1998): lexicalized features will be given up first in processes of dialect levelling but acquired first in processes of dialect acquisition.
Factors related to salience

• **Phonemicity**: dialect features involving a phonemic contrast between the standard and the non-standard variant are more salient than features without such a contrast.

• e.g. Auer et al.: cases of the vernacular neutralizing a phonemic contrast of the standard, i.e., merging of two standard phonemes into one vernacular phoneme.
Factors related to salience

- **Areal distribution**: dialect features with a small geographical distribution are salient (primary) features, whereas a large(r) geographical distribution is generally related to less salient features.

- Auer et al.: features with a small areal distribution are predicted to be given up first in dialect levelling and acquired first in dialect acquisition.

- Not implemented in Auer et al.
Purpose of this study

• Are salient dialect features acquired better than less salient features by standard-speaking children acquiring the dialect of Maldegem?

• Investigate the effects of the salience-related criteria phonemicity, lexicalization and geographical distribution on the degree of correct dialect realization of phonological variables.
Methodology

• **Location**: Maldegem > East-Flanders > Belgium

• **Participants**: 128 children, raised in Standard Dutch, living and going to school in Maldegem

• **3 age groups**: 9, 12, 15 years old

• **Procedure**: word list (167 words), picture naming, sentence completion

• **Variables**: 20 phonological dialect features
Implementation of salience-related criteria

Lexicalization

• Implemented as (1) the distinction between lexically and phonologically conditioned variables (i.e., lexicalized vs. rule-governed, respectively), and as (2) the distinction between lexical and postlexical features.
Implementation of lexicalization

- Phonologically vs. lexically conditioned
  - Phonologically conditioned (rule-governed): e.g. Standard Dutch /ɛi/ vs. dialect /e:/ before a velar or laryngeal consonant (e.g. rijk ‘rich’)
  - In italics: the phonological condition
  - Lexically determined (word-dependent):
    e.g. Standard Dutch /ɛi/ vs. dialect /iə/ (e.g. geit ‘goat’)
    - Only in a restricted set of words
    - Have to be learned word by word
Implementation of lexicalization

• **Lexical vs. postlexical dialect features:**
  
  – Lexical Phonology (Kiparsky 1982; Mohanan 1986; Hargus and Kaisse 1993)
  
  – Related to salience in Auer et al. (1998:184): “postlexical processes should be less salient than lexical regularities”.

  **Postlexical rules:**
  – Only 3 variables: *l*-deletion, *n*-deletion, glottalization of *k*
    - e.g. *l*-deletion: **not structure-preserving**, i.e., rule results in extra-long vowels, which are allophones of their short equivalents (vs. lexical rule does not result in segments that do not exist in the phoneme inventory).
    - e.g. *l*-deletion: **exceptionless** rule, i.e., applies to all cases where the structural conditions are met.
    - e.g. *l*-deletion: **productive feature**: applies to loan words (e.g. *grill* [hri:], *body-building* [bodibi:diŋ]).

  **Lexical rules**: all other variables
Implementation of salience-related criteria

Geographical distribution

- Calculated for each phonological feature involved;
- on the basis of the relevant maps in the Phonological Atlas of Dutch Dialects (short: FAND);
- hypothetical circle (radius of 30 kilometers) drawn around Maldegem;
- 24 points of measurement;
- In how many villages/points of measurement does the Maldegem dialect variant occur?
- Geographical distribution = total number of observations of a particular dialect feature
Implementation of salience-related criteria

Phonemicity

• Auer et al. (1998):
  – Phonemicity related to distinction between phoneme mergers and phoneme splits.
  – Splits are acquired more slowly than mergers, although both involve phonological contrasts.
  – Variables involving a phonological contrast are more salient than variables not involving such a contrast.

• We implemented phonemicity as phoneme split: the effect of the involvement of a variable number of phonological contrasts on the correctness of dialect forms:
  → variables involving a larger number of phonological contrasts are more salient than variables involving fewer contrasts
Implementation of phonemicity

- Phoneme split: when one Standard Dutch variant corresponds to two or more Maldegem dialect variants: e.g.

  SD  DIA
  o:   o:
        uə
             Ø

  - i.e., phoneme split involving one Standard Dutch variant corresponding to three dialect variants (= three phonological contrasts).
Hypotheses

• General hypothesis: salient features are acquired better than less salient ones.
  
  – (1) (a) Lexical features will be acquired better than postlexical ones.
  
  – (1) (b) Lexically determined features will be acquired better than phonologically conditioned ones.
  
  – (2) Phonological variables with a small geographical distribution will be acquired better than those with a large geographical spread.
  
  – (3) Variables involving phoneme splits with a larger number of phonological contrasts will be acquired better than those involving phoneme splits with fewer phonological contrasts.
Results

• (I) Monofactorial results:
  – Effects of salience-related variables and of the variable *age* on correct vs. incorrect dialect realization by second dialect learners in isolation.

• (II) Multifactorial results:
  – Generalized linear mixed-effects model (using R 2008) with fixed effects *lexicalization*, *(geographical distribution)*, *(phonemicity)* and *age* and random effects *subject* and *item*. 
## Monofactorial results: lexicalization

<table>
<thead>
<tr>
<th></th>
<th>Correct realization</th>
<th>Incorrect realization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Lexical</td>
<td>6239</td>
<td>45.13</td>
</tr>
<tr>
<td>Postlexical</td>
<td>2069</td>
<td>57.73</td>
</tr>
<tr>
<td>Lexically</td>
<td>2871</td>
<td>38.02</td>
</tr>
<tr>
<td>conditioned</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phonologically</td>
<td>5437</td>
<td>55.16</td>
</tr>
<tr>
<td>conditioned</td>
<td></td>
<td></td>
</tr>
<tr>
<td>∑</td>
<td>8308</td>
<td>47.73</td>
</tr>
</tbody>
</table>

Table 1: Absolute and relative frequencies of the nominal variable *lexicalization* as a function of correctness.
Monofactorial results: lexicalization

• Both implementations of the *lexicalization* variable, viz. lexical vs. postlexical ($\chi^2 = 181.03$, df = 1, $p < .0001$) and phonologically conditioned vs. lexically determined ($\chi^2 = 503.96$, df = 1, $p < .0001$) have a statistically significant impact on dialect form correctness.

• Correctness is stimulated by postlexical features (57.73% vs. 45.13%) and phonologically conditioned features (55.16% vs. 38.02%).
Monofactorial results: lexicalization

• Hypothesis that salient features are acquired better than less salient ones is not corroborated:
  – Postlexical features (i.e., rule-governed, less salient) significantly more correctly realized than the more salient lexical features.
  – Phonologically conditioned features (i.e., rule-governed, less salient) significantly more correctly realized than the more salient lexically determined features.
Monofactorial results: geographical distribution

Figure 4: Distribution of geographical spread for correct vs. incorrect realizations

Number of correct vs. incorrect dialect realizations
Monofactorial results: geographical distribution

Boxes:
- 50% of the correct dialect forms occur in a relatively restricted geographical area, i.e., the area between 2 and 8
- 50% of the incorrect dialect forms occur in a larger geographical area, i.e., the area between 2 and 11.5

Range of all data (two horizontal lines):
- Correct dialect forms have a smaller geographical spread, i.e., between 1 and 16
- Incorrect forms have a larger spread, i.e., between 1 and 24

• **Conclusion**: the larger the geographical spread of a dialect feature, the higher the odds that it is produced incorrectly. Kruskal-Wallis rank sum test: significant effect of geographical distribution ($\chi^2 = 111.39$, df = 1, $p < 0.0001$).

• **Hypothesis** that salient features are acquired better than less salient features is corroborated.
## Monofactorial results: phonemicity

Table 2. Number of correct and incorrect dialect realizations (N, %) for dialect features, involving 2, 3, 5 or 6 phonological contrasts.

<table>
<thead>
<tr>
<th></th>
<th>Correct realization</th>
<th>Incorrect realization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>2 phonological contrasts</td>
<td>2783</td>
<td>49.41</td>
</tr>
<tr>
<td>3 phonological contrasts</td>
<td>2952</td>
<td>41.18</td>
</tr>
<tr>
<td>5 phonological contrasts</td>
<td>972</td>
<td>75.94</td>
</tr>
<tr>
<td>6 phonological contrasts</td>
<td>1601</td>
<td>48.11</td>
</tr>
<tr>
<td>∑</td>
<td>8308</td>
<td>47.73</td>
</tr>
</tbody>
</table>

Table 2. Number of correct and incorrect dialect realizations (N, %) for dialect features, involving 2, 3, 5 or 6 phonological contrasts.
Monofactorial results: phonemicity

• Table 2 seems to indicate that there is no clear trend, but the distributional differences of correct and incorrect realizations with respect to phonological contrasts are statistically significant ($\gamma = -0.04$, $p < .01$);

• i.e., the number of incorrect realizations decreases as there are more phonological contrasts involved.

• Thus, salient dialect features, involving a larger number of phonological contrasts, are acquired better than less salient features, involving fewer phonological contrasts.

• Hypothesis is corroborated.
**Monofactorial results: age**

<table>
<thead>
<tr>
<th></th>
<th>Correct realization</th>
<th>Incorrect realization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>9 years old</td>
<td>2552</td>
<td>34.12</td>
</tr>
<tr>
<td>12 years old</td>
<td>3897</td>
<td>56.19</td>
</tr>
<tr>
<td>15 years old</td>
<td>1859</td>
<td>62.13</td>
</tr>
<tr>
<td>$\Sigma$</td>
<td>8308</td>
<td>47.73</td>
</tr>
</tbody>
</table>

Table 3. Number of correct and incorrect dialect realizations (N, %) per age group.
Monofactorial results: age

- Statistically significant effect of age on correctness ($\gamma = -0.39$, $p < .01$), signifying that the number of incorrect realizations decreases when the second dialect learners grow older.
Monofactorial results: summary

• The correctness of the produced dialect variables by second dialect learners is affected by (i) the salience-related variables geographical distribution, lexicalization and phonemicity, albeit not always as hypothesized, and (ii) by age.

• Correctness appears to be stimulated by postlexical features (57.73% vs. 45.13%), phonologically conditioned features (55.16% vs. 38.02%), a smaller geographical spread, a larger number of phonological contrasts and a growing age.

• The effects of geographical distribution and phonemicity both signify that salient dialect features are acquired better than less salient ones, as we hypothesized, but the effect of lexicalization points in the opposite direction.
Multifactorial results

- Generalized linear mixed-effects model in which the fixed effects *lexicalization*, *geographical distribution*, *phonemicity* and *age* are measured simultaneously, while controlling for subject and item variation.
  - Relative impact of the selected variables (e.g. which variable contributes most to correctness vs. incorrectness?).
  - Take into account possible interaction effects between the selected variables and age.

- **Multicollinearity**: the estimates of both *lexicalization* variables, *geographical distribution* and *phonemicity* highly correlate with each other (the correlation coefficient ranges from $|0.342|$ to $|0.876|$), signifying that all these variables explain the same variance in the dialect productions of the second dialect learners.
Multifactorial results

• The variable *phonologically (un)conditioned features* reduces the amount of unexplained variation most (AIC = 17089 vs. AIC = 17130 for the (post)lexical features variable, AIC = 17128 for the geographical spread variable and AIC = 17134 for phonemicity) and is therefore retained.

• Global properties of the mixed-effects model:

  – Response variable: correct vs. incorrect dialect forms
  – Fixed effects: age + phonologically (un)conditioned + age* phonologically (un)conditioned
  – Random effects: subject (n = 128), item (n = 122)
  – Number of observations = 17408
  – C = 0.86 (1 = model predicts unseen data perfectly)
<table>
<thead>
<tr>
<th>Fixed effects</th>
<th>Odds ratio exp(β)</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>-</td>
<td>p &lt; .001***</td>
</tr>
<tr>
<td>Phonologically unconditioned (vs. conditioned)</td>
<td>0.93</td>
<td>p &lt; .001***</td>
</tr>
<tr>
<td>Age</td>
<td>-0.34</td>
<td>p &lt; .001***</td>
</tr>
<tr>
<td>Age*phonologically unconditioned</td>
<td>-</td>
<td>p &gt; .05</td>
</tr>
</tbody>
</table>

Table 4: Model odds ratios for (in)correctness of dialect forms by second dialect learners.
Multifactorial results: discussion

Table 4:

- odds ratio $> 1$ signifies that the explanatory variable stimulates incorrectness
- odds ratio $< 1$ signifies that the explanatory variable stimulates correctness
- odds ratio value farther from 1 (in each direction) indicates a stronger effect
Multifactorial results: discussion

Table 4: significant main effects:

- **Phonologically unconditioned** (= lexically determined) dialect features *stimulate incorrect production* more than conditioned dialect features (odds ratio > 1)
- The probability of incorrect realizations increases 93% when the dialect features are phonologically unconditioned (vs. conditioned).

- **Age enhances correctness** (odds ratio < 1)
- The probability of incorrect (vs. correct) dialect features decreases almost three times (= 1 / -0.34) for each one unit increase in age.

- Confirming results of monofactorial analyses
Multifactorial results: discussion

- Interaction effect of age and phonologically unconditioned is not significant, signifying that the main effect of phonologically unconditioned remains constant when age increases.

- Age has the largest impact on correctness of dialect features (i.e. the odds ratio of age (-0.34) is further from 1 than the odds ratio of phonologically unconditioned (0.93)).
Multifactorial results: discussion

• The **hypothesis** that salient dialect features are acquired better than less salient ones in second dialect acquisition is **not corroborated**: phonologically unconditioned (salient) features stimulate incorrect dialect realizations more than phonologically conditioned (less salient) features.
Discussion and conclusions

• Multifactorial results: only *lexicalization* and *age* really matter.

• Positive effect of *age* on correctness (dialect proficiency keeps improving up to the age of 15) supports observations from sociolinguistic studies (cf. Hill 1981; Hoppenbrouwers 1990; Kerswill 1994, 1996) that the influence of peers reaches its peak around the age of 15 or 16.
Discussion and conclusions

• Main conclusion: since *phonologically unconditioned* stimulates incorrect realizations, the conclusion is that – against expectations – less salient (phonologically conditioned) features are acquired better than the more salient, lexically determined ones.

• Thus, *lexicalization* seems to override the effects of all other criteria.
  – cf. Auer et al. (1998): lexicalized features were not given up first in dialect levelling.

• Lexicalization may not be the best criterion of salience.
Discussion and conclusions

• Which aspect of lexicalized features is responsible for this result?
• The complexity of lexically determined features may be responsible, i.e.:

  – Chambers (1992): distinction between simple rules (= rule-governed variables, “automatic processes that admit no exceptions”) and complex rules (= lexicalized variables, opaque outputs: “have exceptions or variant forms”).

  – Complex phonological rules are acquired later and with more difficulty than simple rules in the acquisition of Southern-England English by Canadian adolescents (see also Payne 1980; Kerswill and Williams 1992).

  – Trudgill (1986) and Wilson (2011): non-adoption of dialect features may be due to (phonological) complexity.
Discussion and conclusions

• But: we need a well-defined concept of complexity in order to assess its role in the acquisition of the Maldegem dialect phonology;

• Since complexity does not have an unequivocal inhibitory effect on dialect correctness: e.g. increasing number of phonological contrasts stimulates correctness, although more complex.
  – cf. Studies in morphological development in children: a higher degree of complexity in a morphological paradigm may actually enhance acquisition (e.g. Küntay & Slobin, 1996; Xanthos & Gillis, submitted).

• Salience is just one of many determinants in predicting (in)correctness of dialect realizations by second dialect learners.
Thank you!