Realisation of German final syllable /ən/ as a cue to accent authenticity for French accents in German

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Introduction

(Neuhauser and Simpson, 2007a and b)

- listener’s ability to judge the authenticity of an accent is fairly limited
  - native speakers of German vary widely in their ability to produce a foreign accent judged by listeners to be authentic
  - wide variation in the ability of listeners to successfully identify the genuine non-native speaker

→ goes contrary to the claim that it is relatively easy to detect an imitated foreign accent
Authenticity seems to be questioned in both imitators and genuine non-native speakers if typical German phonetic/phonological patterns are present, i.e. have been

- successfully acquired by the non-natives
- unsuccessfully concealed by the imitators
Features identified to be crucial for accent authenticity judgements of French and American English accents in German

- realisation of /h/
- postvocalic and initial /r/
- junctural glottalisation
- realisation of final /ən/
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Introduction

Realisation of final /-ən/ in German

- elision of [ə]
- syllabic nasal shares place of articulation with preceding plosive (progressive assimilation of place)
- e.g. <haben> (‘to have’) [haːbən] → [haːbəm]
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- full realisation of final /-ən/ ([haːbən])
  → judged to be authentic

- reduction of final /-ən/ by realising a syllabic nasal ([haːbəm])
  → judged to be unauthentic
present study attempts to verify the different phonetic realisations of final /-ən/ as important correlates of authenticity of a French accent in German
The following questions are being tested:

1. Is the realisation of final /-ən/ crucial for accent authenticity judgements?
2. Does the preceding consonant affect the importance of final syllable realisation in accent authenticity judgements?
3. Can a manipulation of the data affect the authenticity judgements?
Results for question 1 and 2

"Die verstärkten Sicherheitsvorkehrungen der Banken könnten Räuber abgeschreckt haben."
(Increased security measures by banks may have deterred robbers.)

- Neuhauser & Simpson (2007a)
- contains five occurrences of final /-ən/
- analysed for 12 subjects, i.e. 8 native German speakers imitating a French accent and 4 native French speakers speaking German
belong to the following 4 groups of speakers which arise from the results of the listening experiment in Neuhauser & Simpson (2007a)

1. most authentic sounding native German speakers imitating a French accent (N=4)
2. least authentic sounding native German speakers imitating a French accent (N=4)
3. most authentic sounding native French speakers speaking German (N=2)
4. least authentic sounding native French speakers speaking German (N=2)
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Preliminary Results

![Graph showing the percentage of judgement "authentic" against the number of reductions of the final syllable for native French and native German speakers. The graph includes a dashed line at 50% to indicate the threshold for authenticity.]

- **Native French** represented by open circles
- **Native German** represented by filled circles

Percentage of judgement "authentic" vs. Number of reduction of final syllable
3 of 6 speakers judged to be producing authentic foreign accents
- reduced final /-ən/
- all of them in only one of five possible cases (in the word <haben> each)

5 of 6 speakers judged to be producing unauthentic accents
- reduced final /-ən/ (11 x)

2 speakers judged to be least authentic in fact were native French speakers both producing reductions of final /-ən/
- not only in <haben> but also in other cases
Not only the realisation of final /-ən/ may have an influence on authenticity judgements but the preceding consonant might be relevant as well.
Idea of Manipulation of the Data

- manipulate the original utterances from both authentic and non-authentic sounding speakers in both directions, i.e. by replacing [-ən] sequences with syllabic nasals and vice versa.

- assumption: if realisation of final syllable /-ən/ is one important cue for accent authenticity the authenticity judgements might be influenced by manipulation.
12 Stimuli (French accented German)

- 6 judged to be authentic (2 native French)
- All of them were manipulated by replacing [-ɛn] sequences with syllabic nasals
6 judged to be non-authentic (2 native French)

- 5 of 6 manipulated, i.e. the original reduced forms were replaced by full realisations of final /-ən/
- 1 native German speaker (Ff02) was not manipulated (already produced full realisations in all cases but was judged to be non-authentic)
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Manipulation of the Data and subsequent Listening Experiment

Method

Method of Manipulation
(using praat)

Full realisations of final /-ən/ of authentic sounding speakers

- substituted by reduced forms from the undisguised German text version
- elision of [ə] and simulating a nasal release by filtering the plosive, e.g. in <Banken>
  - filter: pass band (0–1000 Hz)
- elision of [ə] and lengthening the duration of [ŋ] to receive a syllabic sounding end of <-vorkehrungen>
Reduced realisations of final /-ən/ of non-authentic sounding speakers

- substituted by full realisations from other text versions
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Audio Examples

- full realisation → reduced realisation, e.g. $(Fm03)$
- reduced realisation → full realisation $(F-nf01)$
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Listening Experiment – Stimuli

- experimental procedure same as Neuhauser & Simpson (2007a)
- same stimulus sentence
  
  „Die verstärkten Sicherheitsvorkehrungen der Banken könnten Räuber abgeschreckt haben.”

- 35 stimuli spoken by 34 speakers
  
  - 25 native German speakers imitating a foreign accent
  - 9 non-native German speakers speaking German
35 stimuli were presented in 5 blocks with different randomisations (= 175 stimuli)

- same randomisation as Neuhauser & Simpson (2007a)
- block 1–2: original stimuli
- block 3–5: stimuli of 11 subjects were substituted by their manipulations
Manipulation of the Data and subsequent Listening Experiment

Method

advantages

- comparability with Neuhauser & Simpson (2007a) and serves as control
- comparability of original and manipulated data within one listener group and one experimental setting
Listening Experiment – Listeners

- 27 native German speakers
  - 22 female, 5 male
  - 21–29 years old (Ø = 23.4)
- undergraduate students of speech science and phonetics
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Manipulation of the Data and subsequent Listening Experiment

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Listening Experiment – Task

- listeners were told that the presented stimuli were spoken by both native German and non-native German speakers
- experimental task: judge whether the stimulus item was spoken with an authentic or a non-authentic (imitated) accent
Listening Experiment – Results
(comparison of results 2007 and 2008)

- though equivalent experimental design and subject features (number, age, sex) differences in the authenticity judgements of the *original* stimuli

- for 14 out of 35 speakers the mean authenticity judgement differed more than 10 percentage points from the judgements in 2007
Comparison of results 2007 and 2008 – subgroup French Accent

![Bar chart showing judged accent authenticity for different speakers in 2007 and 2008.](chart.png)
Results

- 7x increase of judgement "authentic" (max 26 percentage points)
- 3x decrease of judgement "authentic" (max 34 percentage points)
- 1x no change
Comparison original vs. manipulated stimuli
no significant change between the authenticity judgements of the original and the manipulated stimuli

maximum 0–8 percentage points

for 2 speakers: decrease of perceived authenticity by 8 percentage points

for 2 speakers: increase of perceived authenticity by 6 percentage points

⇒ difference between the two listener groups (2007 vs 2008) is larger than between the original and the manipulated stimuli
Discussion

- A series of studies were carried out to examine which variation of characteristics cause the success or the failure of a disguise attempt.
- Authenticity judgements of listeners with limited training seem to be unreliable.
  - Neuhauser & Simpson (2007a)
  - Variation between the authenticity judgements in 2007 and 2008.
Discussion

though preliminary analyses suggested the opposite:
Realisation of German final syllable /-ən/ seem not to be that important that a manipulation of them could lead to other authenticity judgements

possible that subjects remember their judgements of the first 2 blocks (original stimuli)
complex combination of several features that are relevant

most striking result: major phonetic manipulation seems to produce such a negligible effect on listeners’ judgements