

## Rethinking reduction on the basis of phonetic variation in a discourse marker

Mirjam Ernestus<sup>a</sup> and Rachel Smith<sup>b</sup>

<sup>a</sup>Centre for Language Studies, Radboud University & Max Planck Institute for Psycholinguistics

<sup>b</sup>Glasgow University Laboratory of Phonetics, University of Glasgow, UK

contact email: m.ernestus@let.ru.nl

Many word tokens are produced with fewer or weaker segments in spontaneous conversations than in more formal speech. This study reports on detailed qualitative and quantitative research on the phonetic variation of one single word with the aim to increase our understanding of the nature of the phenomenon of speech reduction.

We focused on the Dutch word *eigenlijk* /'eɪxələk/ 'actually'. We randomly selected 159 tokens, produced by 18 different speakers, from the ECSD, a corpus of spontaneous conversations in Dutch (Ernestus, 2000). We made broad segmental transcriptions of each token and labelled its fine phonetic properties as well as its prosodic status and that of the surrounding syllables. All transcriptions were checked by at least one other transcriber.

The transcriptions show that the variation in the pronunciation of discourse markers may be substantial. We found ten different broad transcriptions for *eigenlijk* (ignoring variations in voicing), ranging from full /'eɪxələk/ to monosyllabic /'eɪk/ and /'eɪx/. The full variant is less common than the reduced variants (only 20% of the tokens are unreduced). This raises the question which form of such a word should be considered as canonical: the full form, which is represented in orthography, or the most frequently occurring reduced form (which for *eigenlijk* is /'eɪxlək/).

Segments that seem absent often left all kinds of traces, which adds to the variation that we observed at the level of broad transcription. For instance, 'absent' /l/ sometimes surfaced in the form of lateral frication during or after the velar fricative, or left an F2 dip coinciding with the end of the fricative and start of the following vowel, which mirrored the low F2 that was always present in /l/ if it was clearly audible. Similarly, tokens ending in the phonotactically illegal cluster /xk/ (i.e. /eɪxk/) often ended in unexpectedly long obstruent clusters, cueing absent schwa. These findings raise questions about what is exactly stored in the mental lexicon. If something more than the full form is stored -- which is likely because of the high frequencies of the reduced forms -- the lexical representations are likely to contain subtle traces of 'absent' segments.

Speakers clearly differ in the variation that they show. We can roughly distinguish two groups of speakers on the basis of *eigenlijk*'s number of syllables. At the level of phonetic detail, while most of the patterns observed were common to more than one speaker, there were certain production strategies that appeared to be specific to one or just a few speakers. For instance, two speakers produced overlapping velar frication and /l/-quality. They contrast with other speakers who often devoiced the /l/. Furthermore, impressionistically, some speakers were very variable in their realisations of *eigenlijk* whereas others were more consistent. This variation has to be accounted for in models of speech production and of speech perception.

Notwithstanding all this variation, we found that every pronunciation variant of *eigenlijk* includes the full vowel and a velar/uvular consonant. These two characteristics may thus be considered as two landmarks that characterize the word. This finding raises questions about speech processing. Are these landmarks indicated in the mental lexicon? How do listeners use these landmarks during word recognition?

Our prosodic analyses revealed two unexpected facts. First, in contrast to what is generally assumed, highly reduced discourse markers can occur in prosodically strong positions. Eight monosyllabic tokens and 28 disyllabic tokens were primary-accented, while sixteen monosyllabic and five disyllabic tokens were secondary-accented. Reduction is therefore not restricted to unaccented

positions; at least not for all word types. The occurrence of highly reduced forms in accented positions underlines that reduced forms of at least some word types are not special and can occur without restrictions.

Second, we are the first to document that a word's degree of reduction may be influenced by the rhythm of the phrase. Speakers showed a preference for monosyllabic tokens of *eigenlijk* if this word was followed by an unstressed syllable. Polysyllabic tokens were followed by unstressed syllables in only 29% of cases, while monosyllabic tokens were approximately equally often followed by unstressed and stressed syllables (51% versus 49%). Speakers thus made their choice for a monosyllabic versus a polysyllabic form on the basis of the next word, taking into account their general preference for alternating patterns of stressed and unstressed syllables (e.g. Kelly and Bock 1988 and references therein).

This effect of rhythm, in combination with our finding of individual differences between speakers, strongly suggests that reduction is not a fully automatic process that arises when speakers are under time pressure. Speakers clearly have a choice whether to reduce and how to reduce, and they make this choice, among others, on the basis of the rhythm of the phrase, while adhering to their own speech habits. This result is in line with previous findings that words/syllables in final position are differently reduced depending on whether they occur turn-finally or phrase-finally (e.g. Local, Kelly, & Wells, 1986).

In conclusion, our detailed study of 159 word tokens and their contexts show that several assumptions that can be found in the literature on speech reduction do not hold for all words. Massive speech reduction may occur in prosodically strong positions and is not necessarily the consequence of automatic production processes. In addition, we documented clear individual differences and an effect of the rhythm of the phrase on reduction degree. These findings raise important questions about the mental lexicon and about the processes underlying speech production and comprehension.

Future research is necessary to answer the question whether discourse markers like *eigenlijk* may be different from semantically strong words, like nouns. We therefore call for more detailed qualitative and quantitative analyses of many tokens of individual words produced in casual speech. The present study has clearly shown that such studies may show the necessity to rethink the nature of speech reduction.

## References

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