STRESS CLASH AVOIDANCE IN DUTCH: INVERSION OF STRESS PATTERN IN COMPLEX NOUNS

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ABSTRACT

We tested the phonetic basis of a recent claim made by metrical phonologists that the stress pattern of di-syllabic Dutch words with initial stress is inverted to final stress in order to avoid a stress clash when such words are embedded (as the right-hand element) in a compound noun. In one experiment, speakers produced crucial words both as simplex nouns and embedded in compounds; listeners were then asked where they perceived this stress clash in the target words. The results showed that stress clash has been avoided in spoken Dutch with high probability. In a second experiment, we presented simplified versions of the crucial word types with systematically varied stress patterns; listeners had to rate the acceptability of the range of patterns in various rhythmic contexts. The results indicate that listeners perceive no stress shift in naturally produced word tokens, and that they always disallow versions of such words with inverted stress patterns.

1. INTRODUCTION

Compound adjectives in Dutch and English, such as red hot, have final stress when used predicatively: the ‘poker is red hot’ (a simple quote preceding a syllabic mark strong stress). In attributive position, however, the final stress on these words is retracted: a ‘red hot poker’. If the stress had not been retracted, the result would have been two strong stresses abutting one another, a situation called ‘stress clash’: a ‘red hot poker’. It is generally claimed that this stress clash is resolved by inverting the stress pattern of these words when embedded in compounds (cf. [6,7]). When a word like ‘harnas’ (armour), with lexical stress on the first syllable, is embedded in a compound noun, a situation of stress clash may arise, as in ‘borsbostharms’ (breast armour), the authors concerned [6,7] claim that stress clash is resolved in these cases by inverting the stress pattern of the embedded word, yielding ‘borsbostharnas’, which would have the same stress pattern as ‘schepenbosschaps’ (ship’s compass), of which the compound noun (compass) has lexical stress in final position. Moreover, stress pattern inversion is claimed to be applicable only when the embedded noun has initial stress on a closed syllable (a so called non-branching rhyme). Therefore, no stress adjustment is said to occur when the lexically stressed first syllable of the embedded noun is open as in, e.g., ‘premie’ (premium), ‘jaarpremie’ (annual premium).

Curiously enough, the older literature contains no allusions to this type of stress adjustment at all, and ever since the claims were made, phoneticians have expressed their doubts whether these are indeed cases of stress adjustment. In the present study we tried to settle this issue in a series of experiments.

2. EXPERIMENT I: PERCEIVED STRESS IN NATURAL SPEECH

2.1. Method

The basic stimulus content consisted of three types of di-syllabic Dutch nouns, each category filled with five exemplars:

1. initial stress on an open syllable (‘premie-type’)
2. initial stress on a closed syllable (‘harnas-type’)
3. final stress (‘kompas-type’)

These 15 words were used as simplex words as well as embedded words—finally in tri-syllabic compounds, e.g., ‘jaarpremies’, ‘borsbostharms’, and ‘schepenbosschaps’. The resulting set of 30 words were presented twice in a fixed carrier phrase ‘Heb i een [TARGET] ontdek? (with accent on the target) and twice more times in Hebrew ‘Jaar’premie—type and the ‘harnas-type’.

The perceived stress distribution clearly differs for words with initial stress (‘premie-type and ‘harnas-type) and those with final stress (‘kompas-type), F(3,4194) = 957.1, p<.001. The difference between initial stress and final stress (‘premie—type), F(3,4194) = 957.1, p<.001 (this corresponds to the difference between primary versus secondary stress on the word level). The stress patterns are perceived as more extreme in accented simplex words than elsewhere. Crucially, however, none of the differences between the ‘premie-type and the ‘harnas-type are ever significant, but these two types always differ significantly from the ‘kompas-type (Scheffé procedure, p<.05).

So far, these results do not support the claims made by metric-
The resulting set of 3 (lexical words) and 2 (yes/no accent on target) * 5 (temporal stress patterns) = 30 stimulus types were presented to 19 native Dutch listeners in two different random orders, who had to indicate the acceptability of each item along a scale from 0 (unacceptable stress pattern) to 7 (completely acceptable stress pattern).

3. Results
From the acceptability scores of the five temporally different versions of a stimulus type we derived its preferred stress pattern for each individual listener. To this effect we devised an index such that negative values indicate stronger preference for initial stress (i.e., a relatively long first syllable), and positive values stronger preference for final stress (i.e., a relatively long second syllable); an index of 0 indicates that perfectly even stress is preferred. Table II summarizes the results.

<table>
<thead>
<tr>
<th>Stimulus Type</th>
<th>Accent Type</th>
<th>0</th>
<th>2</th>
<th>3</th>
<th>5</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>'premie</td>
<td>accent</td>
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<td></td>
<td></td>
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<tr>
<td>'harnas</td>
<td>accent</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>kom'pas</td>
<td>accent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'premie, kom'pas</td>
<td>accent</td>
<td></td>
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</tr>
</tbody>
</table>

We notice that the effects are stronger for unaccented than foraccented targets. Words with initial lexical stress are always towards the negative end of the scale, while words with final stress appear at the positive end of the scale. When the simplex words are embedded into compounds, there is a general preference for a stronger (more stressed, longer) final syllable. This effect is especially clear when the targets are unaccented, and somewhat unstable for accentuated targets. Crucially, however, there is not the slightest preference for stronger final stress when 'harnas is embedded. Embedding a compound word in a compound noun would lead to an inversion of stress pattern. The stress pattern is systematically varied from stress on the penultimate syllable in any di-syllabic word gets lengthened so as to mark off the word (final lengthening). Since the final syllable of a compound word is shorter than the onset of the embedded word, it is compatible with the desired stress pattern of kom'pas, the shortening is not picked up for this type of word. When a long, open initial syllable is shortened (as in 'premie), the decrement in duration will be too small to reach the listener's awareness. But if a short, closed syllable is stressed (i.e., the same amount, the effect may be above threshold and the linguist will be tempted to interpret this as a shift in stress.

We take the view, of course, that the effects of such low-level duration rules should not be mistaken for stress effects; or else we would have to interpret the same effect as a stress shift in one case ('harnas') and as a sub-penultimate duration shift in others ('premie, kom'pas).

5. REFERENCES

NOTE
Experiments 1 and 2 were run by my students Ellen L. Bish and Ruben van de Vijver, respectively.