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The relevance of feminine rhyme for phonological theory

Björn Köhnlein and Marc van Oostendorp

1. Introduction

Phonological knowledge surfaces in many different ways, but never without being influenced by other factors. Although for a long time, a lot of phonological theory was successfully based on grammaticality judgments of scholars and informants, it has always been acknowledged that the intuitions underlying such judgments can surface, and hence be studied, also in other ways.

A classical source of such ‘external’ evidence for phonological knowledge can be found in the study of poetry. The reason for this is an idea that has been made explicit by Fabb (1997, 2010): poetic traditions never seem to use sound patterns that are not known in one way or another in ‘ordinary’ phonologies of human language. It is possible that the poetic tradition uses something which is not present in the language in question; but a parallel will always be found in some other language. In particular, poetic metrics seem to be built on the same kinds of principles (binary and ternary feet, extrametricality, catalexis) as we need for describing the typology of stress systems of natural language.

Slightly less studied is the phenomenon of rhyme, a stylistic device that is employed in many traditions, with interesting differences as to what counts and what does not count as rhyming. In particular, many authors have pointed out the similarity to reduplication (Kiparsky, 1970, 1973; Holtman, 1996; Yip, 1999; Van Oostendorp to appear): the rhyming constituents can typically be defined in terms of phonological constituency. This is probably clearest in the case of alliteration (1a), in which words start with the same syllable onset, and in the case of masculine rime, in which they end in the same rhyme constituent.

- (1) a. Beauty's effect with beauty were bereft
(Shakespeare, Sonnet 5)
- b. But flowers distill'd, though they with winter meet,
 Leese but their show; their substance still lives sweet.
(Shakespeare, Sonnet 5)

So-called feminine rhyme is slightly more difficult to define in these terms. In this case, the rhyme of a stressed syllable, plus one unstressed syllable match:

- (2) But since she prick'd thee out for women's pleasure,
Mine be thy love and thy love's use their treasure.
(Shakespeare, Sonnet 20)

The sequence *asure* in this case does not correspond to any recognized phonological constituent, although it can still be defined in terms of constituents: it is a trochaic foot, minus the onset of the first syllable. Van Oostendorp (to appear) argues that indeed such rhyme can also be understood in terms of reduplication, albeit with a requirement on dissimilarity.

In this paper, we will not repeat such arguments on the dissimilarity of the onset, but concentrate instead on the second, unstressed syllable in the foot. We start out from the observation that not all unstressed syllables seem equal in this respect, at least in Dutch. The speakers we consulted informally seem to agree that there is a difference between the following (homemade) couplets:

- (3) a. Ik ga nu eerst naar zonnig Lesbos
en reis dan door naar vrolijk Argos.
b. Ik ga nu eerst naar zonnig Hedel
en reis dan door naar vrolijk Bakel.
(I will now first go to sunny A. and afterwards to happy B.)

Both 'rhyming pairs' consist of stressed syllables that are entirely different, followed by an unstressed syllable with the same rhyme. Although neither pair of rhymes counts as perfect, the first rhyming pair seems markedly better than the second one.

This is interesting because it fits an observation that has been made about the Dutch stress system: that schwa syllables behave differently from unstressed syllables headed by full vowels. It has been suggested, for instance, that schwa syllables are not prosodified at all. Kager and Zonneveld (1986) famously observe for instance, that consonant clusters preceding schwa resemble those at the end of the word. Full vowels, on the other hand, do not seem to follow the same restrictions: while (4a-b), with a rising sonority consonant cluster before schwa or word edge are equally impossible, the same cannot be said for (4c).

- (4) a. **metr*
b. **metrə*
c. *metro* 'subway'

What seems to be happening in the case of the verses in (3a) is that the unstressed syllable takes over the role of the 'rhyming' constituent. This actually fits our expectations, in the following sense. It has been observed that closed syllables with full vowels always count as heavy and receive secondary stress in Dutch (although this stress may become extrametrical at the late stages of a derivation according to

Trommelen and Zonneveld 1989). Apparently, rhyme can be sensitive to this secondary stress, even if it is virtual.

This would also help us to refine our expectations. Full vowels in open syllables can be assumed to be light when they follow the main stress – i.e., they form one foot together with the stressed syllable according to Trommelen and Zonneveld (1989). Therefore, they should be worse hosts for a rhyme than VC-syllables. Still, however, full vowels always have the potential to carry stress; schwas on the other hand never receive word stress in Dutch (they can only carry contrastive sentence stress, but rhyme seems insensitive to that).

We therefore may predict the following rating hierarchy for imperfect rhyme (in descending order):

(5) Predicted rating hierarchy for imperfect rhymes: VC > V > ə(C)

We furthermore expect that the structure of the first syllable (VC or V) does not influence the wellformedness of a rhyme, as, following Trommelen and Zonneveld (1989), it only depends on the structure of the second syllable whether the first syllable will form a foot on its own, or will be footed together with the second syllable. In general, we also expect that perfect rhymes will receive better ratings than imperfect rhymes.

We submit that the contrast between rhyming pairs such as those in (3a-b) can be attributed to the differences in metrical structure, whatever the precise way is to describe that difference. It is our goal in this paper to, first, give more empirical substance to the observation in (3), and show that this distinction is indeed made by native speakers of Dutch; and, secondly, to show what implications this has for phonological theory.

2. Experiment

We decided to test how syllabic constituency influences the wellformedness of imperfect rhymes in disyllabic words where the first syllable is stressed. In this experiment, the participants had to judge the quality of rhyme pairs with perfect and imperfect rhymes. In our study, the notion *perfect rhyme* refers to disyllabic words that rhyme on the first, stressed syllable as well as on the syllable following it (e.g. *Kali – Mali*). By *imperfect rhyme*, we refer to words that rhyme on the second, unstressed syllable only (e.g. *Argos – Lesbos*).

Our hypotheses are summarized in (6):

(6) Hypotheses

1. *Perfect rhymes versus imperfect rhymes*

Perfect rhymes are preferred over imperfect rhymes.

2. *Perfect rhymes*

- a) The structure of the stressed first syllable does not influence the wellformedness of a perfect rhyme.

- b) The structure of the unstressed second syllable does not influence the wellformedness of a perfect rhyme.
- c) The vowel quality of the unstressed second syllable does not influence the wellformedness of a perfect rhyme.

3. *Imperfect rhymes*

- a) The structure of the stressed first syllable does not influence the wellformedness of an imperfect rhyme.
- b) The structure of the unstressed second syllable influences the wellformedness of an imperfect rhyme iff the vowels are full: closed syllables with full vowels rhyme are preferred over open syllables with full vowels. Open and closed schwa syllables rhyme equally well.
- c) The vowel quality of the unstressed second syllable influences the wellformedness of an imperfect rhyme. Syllables with full vowels are preferred over syllables with a schwa.

2.1 *Participants*

11 native speakers of Dutch, aged between 17 and 41, participated in the study. All participants were first year students of the BA programme German Language and Culture at Leiden University. At the time when the experiment took place, none of them had received a special training in linguistic and/or poetic rhythm.

2.2 *Rhyme pairs*

All rhyme pairs used in the test were disyllabic, and stressed on the first syllable. We used four different syllable types, deriving from two binary oppositions in the linguistic rime: one between full vowels (V) and schwa (ə) in the nucleus, and one depending on whether or not syllables were closed by a consonant (C).

Since all words were stressed on the initial syllable, this resulted in eight different word types: as schwa cannot be stressed, only syllables with full vowels (V, VC) could appear in initial position, which were either closed or open; in the second syllable, all four types could occur (V, VC, ə, əC).

We created 24 rhyme pairs, three per condition. Two pairs per condition contained imperfect rhymes; i.e., they contained a stressed syllable that did not rhyme followed by an unstressed syllable that rhymed. Eight pairs rhymed perfectly (one per condition). An overview of the different conditions and the rhyme pairs is provided in Table 1.

Table 1: *Rhyme pairs used in the experiment*

First syllable	Second syllable	Perfect rhyme	Imperfect rhyme
V	ə	Tame – Rame	Driene – Rome
			Dole – Lape

VC	ə	Malke – Walke	Drenthe – Marle
			Folte – Zanke
V	əC	Teker – Feker	Bakel – Hedel
			Paler – Boker
VC	əC	Tenkel – Lenkel	Berkeel – Sprundel
			Kalper – Zonter
V	V	Kali – Mali	Lima – Pisa
			Kita – Bila
VC	V	Penko – Renko	Parma – Monza
			Ranta – Pilna
V	VC	Talas – Palas	Milos – Thasos
			Kalim – Rozim
VC	VC	Kaltom – Paltom	Argos – Lesbos
			Markas – Kolpas

2.3 Questionnaire and procedure

We put the 24 rhyme pairs in identical carrier verse pairs, trochaic tetrameters (four alternations of stressed and unstressed syllables) that did not violate any rhythmic properties of Dutch. The carrier verse is provided in (7); stressed syllables are bold, the two syllables of the carrier word are given as $\sigma.\sigma$:

- (7) **Ik** ga **morgen eerst** naar $\sigma.\sigma$
en daarna ook **nog** naar $\sigma.\sigma$.

The 24 verse pairs were randomized and placed in a questionnaire. Participants judged each pair on a scale from 1 to 5 (1 = very bad, 2 = bad, 3 = neutral, 4 = good, 5 = very good); each stimulus was presented once.

The test was conducted in a classroom at Leiden University. Next to the visual presentation in the questionnaire, the stimuli were presented auditorily via speakers. They had been pre-recorded with a 23-year old female native speaker of Dutch. The auditory presentation should ensure that students would not misjudge the stress pattern in the word pairs: that is, they should not turn imperfect rhymes on unstressed second syllables, such as in *Kalim – Rozim*, into perfect ones (*Kalim – Rozim*) by assigning stress to the second syllable.

Due to an error in the creation of the experiment, the verse pair *Paler – Boker* ended up twice in the questionnaire, at the expense of the minimal pair *Kalper – Zonter*, which was not included. Yet since the structure of the second syllable in both cases is identical and the structure of the first syllable did not play a significant role in the patters (see 2.4), we believe that this did not strongly influence the results.

2.4 Results

Hypothesis 1. An ANOVA showed that participants rated perfect rhymes significantly higher than imperfect rhymes: $F(1,262) = 515.596$, $p < 0.001$; the arithmetic means were 4.77 for perfect rhymes and 2.2 for imperfect rhymes. Thus, hypothesis 1 was confirmed.

Hypothesis 2. In line with hypothesis 2a, 2b, and 2c, the phonological make-up of the rhyme pairs did not influence the judgments of perfect rhymes in any way. What concerns the structure of the rime of first syllables (hypothesis 2a), the arithmetic means were 4.81 for closed syllables and 4.74 for open syllables; $F(1,86) = 6.10$, $p = 0.437$. The means for second syllables (hypothesis 2b) were 4.68 (VC), 4.82 (V), 4.77 (əC), and 4.82 (ə); $F(3,87) = 0.503$, $p = 0.681$. Likewise, vowel quality did not influence the results (hypothesis 2c); the mean for full vowels was 4.75, that for schwa 4.8; $F(1,86) = 0.616$.

Hypothesis 3. Hypothesis 3a was confirmed, since the structure of the first syllable did not influence the wellformedness of imperfect rhymes. The mean for closed syllables (VC) was 2.30, the mean for open syllables (V) was 2.12; $F(1,174) = 1.314$, $p = 0.253$. Notable, however, albeit the difference was not significant, the results still show a tendency towards a preference for closed first syllables. Furthermore, as predicted in hypothesis 3b, the rime structure of second syllables with full vowels influenced the ratings for imperfect rhymes, while there were no significant differences for open versus closed schwa syllables: the rime structure (VC, V, əC, ə) had a significant effect on the ratings; $F(3,175) = p < 0.001$). The means for the different conditions are shown in Figure 1; they are 3.16 for VC, 2.36 for V, 1.84 for əC, and 1.43 for ə.

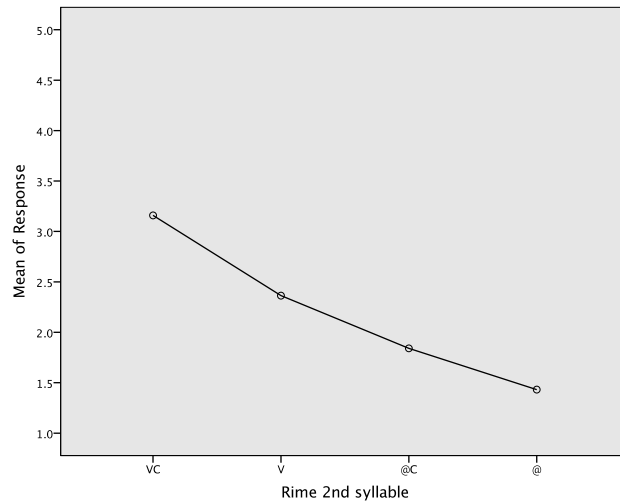


Figure 1: Mean of responses for imperfect rhymes based on the rime of the second syllable; ‘@’ symbolizes schwa.

Subsequent post hoc comparisons (Tukey’s HSD test) with an α level of 0.01 revealed that the difference between VC-syllables and V-syllables was highly significant, $p < 0.001$; this confirms hypothesis 3a. As predicted in hypothesis 3b, the difference between between əC and ə was not significant. Yet still there was a clear tendency that əC is preferred over ə, $p = 0.078$. Furthermore, the difference between V and əC was just not significant at the 1% level, $p = 0.013$.

Lastly, imperfect rhymes whose second syllables had a full vowel (mean: 2.76) were rated significantly higher than syllables with a schwa (1.64); $F(1,174) = 76,687$, $p < 0.001$. This confirms hypothesis 3c.

3. Implications of the results for metrical theory and further research

The hypotheses we investigated during our experiment were based on insights from analyses of the Dutch stress system, as have been gathered in the past few decades. The fact that all our hypotheses have been confirmed, albeit in a rather small experiment, therefore demonstrates that insights from metrical theory can successfully be applied to the study of poetic rhyme. That is, it has been shown that the acceptability of imperfect rhymes increases when this rhyme corresponds to a unit that carries, or can carry, secondary word stress. These results therefore support the idea that there are metrically relevant differences between open and closed syllables, and between full vowels and schwa.

To recapitulate the most important insights, let us once more look at the predicted rating scale in (5), which we repeat here for convenience:

(8) Predicted rating hierarchy for imperfect rhymes: VC > V > ə(C)

In line with this hierarchy, the experiments have shown that syllables of the type VC are the best locations for imperfect rhymes. Still, they are not equally good hosts as syllables with primary stress, which seems to indicate that perfect rhymes will typically be restricted to primary (word) stress. Being potential hosts for stress, post-tonic open syllables with full vowels are moderately acceptable imperfect rhymes. Schwa syllables, then, are the worst locations for an imperfect rhyme: they can never carry (primary or secondary) stress, and therefore constitute bad rhymes. Yet, when it comes to schwa, the results are somewhat less clear-cut than the other effects we have observed. Most of all, this concerns the fact that closed schwa syllables were rated better than open schwa syllables – although the difference was not significant in our small dataset, the tendency is there. Under an interpretation along the lines of e.g. Kager and Zonneveld (1986), this may be unexpected. If the possibility to rhyme is related to the potential of being stressed (which schwa syllables do not have), we would therefore not expect that being open or being closed has any effect on the quality of a schwa rhyme; both should be equally bad.

But what does it mean to say that poetic rhyme becomes better if the rhyming constituent is more likely to receive secondary stress? We believe that in the first place it shows that poetic intuitions on rhyme do indeed depend on linguistic structures. The distinction between stressable and unstressable unstressed syllables can only derive from the phonological structure, we think. This in turn means that feminine rhyme provides a new kind of evidence in favour of these rather abstract structures.

We may now of course also wonder what these poetic intuitions are. Do listeners indeed assign a stress foot to *bos* in *Lesbos-Argos*, but not to *tom* in *Kaltom-Paltom*? In other words, is the metrical structure assigned to words variable, depending on the context? And how are we to understand the fact that closed schwa syllables behave slightly differently from open schwa syllables?

At this point, it may be worthwhile to point out that, while rhyme clearly makes use of phonological constituents, we are still dealing with an artificial, poetic form. That is, speakers (here: the participants of our study) may be more tolerant to violations of linguistic principles in poetry than when it comes to general language competence. In other words, in a situation where they are confronted with largely unacceptable forms (schwa syllables), they may still make a difference between two forms that are otherwise linguistically different. That is, as closed syllables are better units for imperfect rhymes than open syllables, this seems to weigh in favour of əC-

rhymes in comparison to ə-rhymes.¹ Speakers may exploit that knowledge and combine it with the fact that it is not entirely impossible to ‘stress’ a schwa in Dutch – in metalinguistic use, it is possible if a contrastive focus is placed on a schwa syllable, as in the first syllables of /ʏdrevən/ ‘driven’ vs. /bədrevən/ (Van Heuven and de Jonge 2011). In some sense, the better ratings for əC than for ə may be thus be a mix of linguistic criteria (closed syllables are better carriers for stress than open syllables) and metalinguistic criteria (schwa syllables can somehow be turned into ‘stressable’ syllables).

It thus seems plausible to us that the facts should be interpreted as follows: the listener to a poem tries to assign a plausible sound structure to the words in the poem, making it fit with the template that the poem itself assigns to the word. The easier it is to bend the linguistic structure, the better the rhyme is considered to be.

Notice, by the way, that this interpretation makes the specific analysis of Kager and Zonneveld (1986) slightly less likely. If schwa is left entirely outside of prosodic structure, there is no reason why it should be considered part of the rhyming structure at all. We would furthermore expect mixtures of masculine and feminine rhymes (*kat* ‘cat’ rhyming with *latte*, id.), as these would have the same foot structure. Alternative analyses, such as e.g. that in Zonneveld (1993) in which schwas are integrated into foot structure seem more likely.

The data presented in this paper are only a first step towards understanding how metrical structure can affect judgments about poetic rhyme. There are obviously still many phenomena to be considered. For instance, consider the difference between the initially stressed rhyme pairs *Málibu* – *Kókitu* (rhyme from the third syllable) and *Málibu* – *Kókibu* (rhyme from the second syllable). Clearly (at least to us), the first rhyme pair sounds much better than the second one, which constitutes a rather bad rhyme. The difference may again be understood with secondary stress: that is, *Málibu* – *Kókitu* may rhyme better as the third syllable of such words carries a secondary stress (cf. the treatment of words like *Cánada* in Trommelen and Zonneveld 1989). As far as the linguistic structure is concerned, the third syllables of such words would then be similar to the second syllables of pairs like *Árgos* – *Lésbos*. It will remain to be seen whether speakers treat these rhymes equal in their judgments, or whether one word type may be preferred over the other. Furthermore, one may wonder whether it is possible to determine the status of so-called prosodic compounds via rhyme experiments – roughly, prosodic compounds are words whose stress patterns and phonotactics suggest that they consist of two prosodic words albeit they do not have a composite meaning.

To sum up, it should have become obvious that the influence of Wim Zonneveld on the study of metrical structure in Dutch can hardly be overrated. Furthermore, we hope to have shown that the study of poetic rhyme is a fascinating testing ground for theories on phonological constituency. We believe that future

¹ One should, obviously, not mistake this as an indication that it may simply be the amount of phonological material which determines the wellformedness of an imperfect rhyme; if this were true, əC-syllables should be rated better than V-syllables – the opposite is the case.

research in this so far largely neglected area will introduce exciting new types of data into the field of phonology that will not only serve to support or contradict existing approaches to the analysis of certain phenomena (such as linguistic stress) but may certainly also lead to the emergence of novel theoretical insights.

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